

FIG. 1

AlaSerCysLeuAsnCysSerAlaSerIleIleProAspArgGluValLeuTyrArgGlu
1 GGCCTCTGCTTGAAGTGCTCGGCGAGCATACACTGACAGGGAAAGTCCCTACCGAGA
CCGGAGGAGCAACTGACGAGCCGCTCGTAGTATGGACTGTCCCTCAGGAGATGGCTCT

PheAspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeu
61 GTTCGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCT
CAAGCTACTCTACCTTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTCCCTACTACGA

AlaGluGlnPheLysGlnLysAlaLeuGlyLeu
121 CGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCCTCC
GCGGCTCGTCAAGTTGTCTTCCGGAGGCCGGAGG

FIG. 3

GlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIleProAsp
1 CTGGCTCGTGGTCATAGTGGGCAGGGTCTGTCGGGAAGCCGGCAATCATACCTG
GACCGACGCACCACTACCCGTCCCAGCAGAACAGGCCCTCGGCCGTTAGTATGGAC

ArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyr
61 ACAGGGAAAGTCCTCTACCGAGAGTTGATGAGATGGAAGAGTGCTCTCAGCACTTACCGT
TGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTCGTGAATGGCA
A

IleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeuGln
121 ACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAACAGGCCCTCGGCCCTGC
TGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTTGTCTTCCGGAGCCGGAGGACG

ThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLysLeu
181 AGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCTGCTGTCCAGAACCAACTGGCAAAAC
TCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTTTTG

GluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAlaGly
241 TCGAGACCTCTGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATACTTGGCGG
AGCTCTGGAAGACCCGCTCGTATACACCTGAAGTAGTCACCCATATGTTATGACCGGCC

LeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAlaVal
301 GCTTGTCAACGCTGCCCTGGTAACCCGCCATTGCTTCATTGATGGCTTTACAGCTGCTG
CGAACAGTTGCGACGGACCATTGGGGCGGTAAACGAAGTAACCGAAAATGTCGACGAC

ThrSerProLeuThrThrSerGln
361 TCACCAAGCCCACTAACCACTAGCCAA
AGTGGTCGGGTGATTGGTATCGGTT

FIG. 2

5-1-1 1 lggccctccctgttaacttgtcggcgagg]ATCATACCTGACAGGGAAAG
81 1 GTCCGGGAAGCCGGCAATCATACCTGACAGGGAAAG
91 1 ctggctcggtggTCAATAGTGGGAGGGTCTGCTTGTCCGGGAAGCCGGCAATCATACCTGACAGGGAAAG
1-2 1 GGTCAATAGTGGGAGGGTCTGCTTGTCCGGGAAGCCGGCAATCATACCTGACAGGGAAAG

5-1-1 48 TCCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCCTCAGGCAACTTACCGTACATCGAGCAAGGGATGATGC
81 36 TCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCCTCAGGCAACTTACCGTACATCGAGCAAGGGATGATGC
91 70 TCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCCTCAGGCAACTTACCGTACATCGAGCAAGGGATGATGC
1-2 60 TCCTCTACGAGAGTTCGATGAGATGGAAGAGTGCCTCAGGCAACTTACCGTACATCGAGCAAGGGATGATGC

5-1-1 120 TCGCCGAGCAAGTCAAGCAAGGGCCCTCGGCCTC
81 108 TCGCCGAGCAAGTCAAGCAAGGGCCCTCGGCCTCCTGAGACCGCGTCCCGTCAGGCAGAGTTATCGCC
91 142 TCGCCGAGCAAGTCAAGCAAGGGCCCTCGGCCTCCTGAGACCGCGTCCCGTCAGGCAGAGTTATCGCC
1-2 132 TCGCCGAGCAAGTCAAGCAAGGGCCCTCGGCCTC
81 180 CTGCTGTCAGACCAACTGGAAAAACTCGAGACCTTCTGGGCAAGGATATGTGGAACTTCATCAGTGGGA
91 214 CTGCTGTCAGACCAACTGGAAAAACTCGAGACCTTCTGGGCAAGGATATGTGGAACTTCATCAGTGGGA

81 252 TACAATACTTGGGGCTTGTCAACGCTGGtaaaccggccattgtttttacagctg
91 286 TACAATACTTGGGGCTTGTCAACGCTGG
81 324 ctgtcacccactaaccacatggccaa



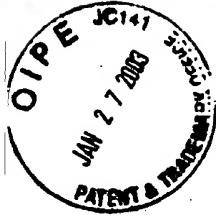


FIG. 4

SerGlyLysProAlaIleIleProAspArgGluValLeuTyrrArgGluPheAspGluMet
1 GTCGGGAAGCCGGCAATCATACCTGACAGGGAAAGTCCTCTACCGAGATTGATGAGAT
CAGGCCCTTGGCCGTTAGTATGGAATGGCTCTAGGAGATGGCTCTCAAGCTACTCTA

GluGluCysSerGlnHisLeuProTyrrIleGluGlnGlyMetMetLeuAlaGluGlnPhe
61 GGAAGAGTGGCTCTCAGCAGCTTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGT
CCTTCTCACGAGACTCGTGAATGGCATGTAGCTCGTCCCTACTACGAGCGCTCGTCAA

LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
121 CAAGCGAGGCCCTCGGCCCTGCAGACCCGGTCCCCGTCCAGAGGGTCAAGGAGCTT
GTTCTCGTCTTCCGGAGCCGGAGGGCACGTCTGGCGAGGGCAGTCCGGTCCAATAGGGGG

AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPhe
181 TGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGCGAAGCATATGTGGAACCT
ACGACAGGGTCTGGTTGACCGTTGAGCTCTGGAAAGACCCGGCTCGTATAACCTTGAA

IleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
241 CATCAGTGGGATAACAATACTTGGGGCTTGTCAACGCTGGTAACCCGGCATTGCG
GTAGTCACCCATATGTTATGAACCGCCGAACAGTTGGGACGGACCATGGGGGTAAACG

SerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
301 TTCAATTGGCTTACAGCTGGTCAACCAGCCACTAACCAACTAGCCAA
AAGTAACCTACCGAAAATGTCGACGGACAGTGGTGGGTGATTGGTGAATCGGTTT

FIG. 5

AspAlaLaiSpheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrlLeuValAla
1 GATGCCCACTTCTATCCAGACAAGCAGAGTGGGGAGAACCTCCCTTACCTGGTAGCG
CTACGGGTGAAAGATAAGGTCTGTTCTGCTCACCCCTCTGGAAAGGAATGGACCATCGC
TyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrp
61 TACCAAGCCACCGTGTGGCTAAGGGCTCAAGCCCCCTCCCCCATCGTGGGACCAGATGTGG
ATGGTTCCGGTGGCACACGCCGATCCCGAGTTCCGGAGGTACCCGGTTGGGAGGTACCGA
LysCysLeuIleArgLeuIleAsnProThrLeuIleGlyProThrProLeuLeuTyrrArgLeu
121 AAGTGTGTTGATTCGCCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGCTATAAGACTG
TTCACAAACTAACGGAGTTCCGGTGGAGGTACCCGGTTGGGAGGTACCGA
GlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrlLeuMetThrCys
181 GGCCTGTTCAAGAATGAAATCACCCCTGACGCACCAGTCACCAAATAACATCATGACATGC
CGCGACAAGTCTTACTTTAGTGGGACTCTGGTGGGTCAAGTGGTTATGTTAGTACTGTACG
MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAla
241 ATGTCGGCGACCTGGAGGTCAGGACCTGGCTCGTCAACGAGCACCTGGGTGCTCGTGGCT
TACAGCCGGCTGGACCTCCAGCACTGCTCGTGAACGCCACGAGCAACGGCAGGACCGA
AlaLeuAlaAlaLaiTyrcysLeuSerThrGlyCysValValIleValGlyArgValValLeu
301 GCTTGGCCGGCTATTGGCTGTCACAGGCTGCTGAGTGGCAAGGGTGGTCTG
CGAACCGGCCATAACGGACAGTTGGCCACCGTACCCGATCACCCGTCAGGAGATGGCTC

-----Overlap with 81-----

SerGlyLysProAlaIleProAspArgGluValLeuTyrrArg
361 TCCGGGAAGCCGGCAATCATACTGACAGGGAAAGTCCCTACCGAG
AGGCCCTTCGGCCGTTAGTATGGACTGTCAGGAGATGGCTC



FIG. 6

1 AspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAla
1 GATGCCCACTTCTATCCCAGACAAAGCAGAGTGGGAGAACCTCCTTACCTGGTAGCG
1 CTACGGGTGAAAGATAGGGTCTGTTCTCACCCCTCTGGAGGAATGGACCATCGC
61 TyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrp
61 TACCAAGCCACCGTGTGCGTAGGGCTCAAGCCCTCCCCATCGTGGGACAGATGTGG
121 ATGGTTCGGTGGCACACCGCAGTCCGAGTTCGGGAGGGTAGCACCCTGGTACACCC
121 LysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeu
121 AAGTGGTTGATTCGCCCTCAAGCCCACCCCTCCATGGCCAACACCCCTGCTATACAGACTG
121 TTCACAAAATAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGACGATATGCTGAC
181 GlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCys
181 GGCGCTGTTCAGAATGAAATCACCTGACGCACCCAGTCACCAAATAACATCATGACATGC
181 CCGCGACAAGTCTTACTTAGTGGACTGCGTGGGTCACTGGTTATGTAGTACTGTAGC
241 MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAla
241 ATGTCGGCCGACCTGGAGGTGTCAGCAGCACCTGGGTGCTCGTGGCGGCGTCTGGCT
241 TACAGCCGGCTGGACCTCCAGCAGTGTGGACCCACGAGCAACGCCGAGGACCGA
301 AlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeu
301 GCTTGGCCCGTATTGCTGTCAACAGGCTGCGTGGTCATAGTGGCAGGGTCGTCTTG
301 CGAAACCGGCGATAACGGACAGTTGTCGACGCACCAGTATACCCGTCCCAGCAGAAC
361 SerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMet
361 TCCCGGAAGCCGGCAATCATACCTGACAGGGAAAGTCCTCTACCGAGAGTTCGATGAGATG
361 AGGCCCTTCGGCCGTTAGTATGGACTGTCCCTCAGGAGATGGCTCTCAAGCTACTCTAC
421 GluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPhe
421 GAAGAGTGCCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTC
421 CTTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAG
481 LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
481 AAGCAGAAGGCCCTCGGCTCTGAGACCCGCGTCCCGTCAGGAGAGGTTATCGCCCT
481 TTCGTCTCCGGGAGCCGGAGGACGTCGGCGCAGGGCAGTCCGTCCAAATAGCGGGGA
541 AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPhe
541 GCTGTCCAGACCAACTGGCAAAACTCGAGACCTCTGGCGAAGCATAATGTGGAACCTTC
541 CGACAGGTCTGGTTGACCGTTTGAGCTGGAAGACCCGCTTCGTATAACACCTTGAAG
601 IleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
601 ATCAGTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCGCCATTGCT
601 TAGTCACCTATGTTATGAACCGCCCCAACAGTTGCGACGGACCATTGGGGCGGTAAACGA
661 SerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
661 TCATTGATGGCTTTACAGCTGCTGTCACCAGCCCACTAACCACAGCCAAA
661 AGTAACCTACCGAAAATGTCGACGACAGTGGTGGGTGATTGGTGTACGGTT



FIG. 7

-----Overlap with 81-----

1 PheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeu
CTTTACAGCTGCTGTCACCAGCCACTAACCACTAGCCAAACCTCCTCTAACATAT .
GAAAATGTCGACGACAGTGGTCGGGTGATTGGTATCGGTTGGGAGGAGAAGTTGTATA

61 GlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAla
TGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCGGTGCGCCTACTGCCTTGCGCG
ACCCCCCCCACCCACCGACGGTCTGAGCGGCGGGGCCACGGCGATGACGGAAACACCCCG

121 GlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeu
CTGGCTTAGCTGGCGCCGCATCGGCAGTGTGGACTGGGAAAGGTCTCATAGACATCC
GACCGAACATCGACCGCGGGCTAGCCGTACAACCTGACCCCTCCAGGAGTATCTGTAGG

181 AlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGlu
TTGCAGGGTATGGCGCGGCGTGGCAGCTTGTGGCATTCAGATCATGAGCGGTG
AACGTCCCATAACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTGCCAC

241 ValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeu
AGGTCCCCCTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTGCCCGAGGCC
TCCAGGGGAGGTGCCTCTGGACCAGTTAGATGACGGCGGTAGGAGAGCGGGCCTCGGG

301 ValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAla
TCGTAGTCGGCGTGGTCTGTCAGCAATACTGCGCCGGCACGTTGGCCCGGGGAGGGGG
AGCATCAGCCGCACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCGCTCCCCC

361 ValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
CAGTGCAGTGGATGAAACCGGCTGATAGCCTCGCCTCCGGGGAAACCATGTTCCCC
GTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGG



FIG. 8A

SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
1 TCCATTGAGACAATCACGGCTCCCCAGGATGGCTGTCTCCGCACTCAACGTCGGGCAGG
AGGTAACCTCTGTTAGTGGCGAAGGGGTCTACGACAGGGCGTGAAGTGCAGGCCCGTCC

ThrGlyArgGlyIleTyrrArgPheValAlaProGlyGluArgProSerGly
61 ACTGGCAGGGGAAGCCAGGCATCTACAGATTTCAGGTTGGCACCGGGGGAGGGCC
TGACCGTCCCCCTCGGTCCGTAGATGTCTAAACACCGTGGCCCTCGCGGGAGGGCG

MetPheAspSerSerValLeuCysGluCystyraspAlaGlyCysAlaTrpTyrrGluLeu
121 ATGTTCGACTCGTCCGTCTGTGAGTGGCTATGACGCAGGCTGTGGTATGAGCTC
TACAAGCTGAGCAGGAGACACTCACGATACTGCGTCCGACACGAACCACTACCGAG

ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProval
181 ACGCCCCGGAGACTACAGTTAGGCTACGGTACATGAAACACCCGGGTCCCGTG
TGCGGGGCTCTGATGTCAAATCCGATGCTGGCATGTACTGTGGGGAAAGGGCAC



FIG. 8B

CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
241 TGCCAGGACCATCTTGAATTGGAGGGCTCTTACAGGCCCTCACTCATATAAGATGCC
ACGGTCTGGTAACTTAAACCCCTCCCGAGAAATGTCGGAGTGAGTATCTACGG

HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTrpLeuValAlaTyrGln
301 CACTTCTATCCAGACAAAGCAGAGTGGGAGAACCTTCCTACCTGGTAGCGTACCAA
GTGAAAGATAAGGTCTGTGTTCCGTCTCACCCCTCTGGAAAGGAATGGACCATGGCATGGTT

Overlap with 36

AlaThrValCysAlaArgAlaGlnAlaProProSerTrpAspGlnMetTrpLysCys
361 GCCACCCGTGTGGCTAGGGCTCAAGCCCCATCGTGGGACCAAGATGTGGAAGTGT
CGGTGGCACACGGCATCCGAGTTGGGGAGGGTAGCACCCCTGGTCTACACCTTCACA

LeuIleArgLeuLysProThrProLeuLeuGlyProThrProLeuLeuGlyAla
421 TTGATTGGCTCAAGCCCCACCCCTCCATGGGCCAACACCCCTGCTATAAGACTGGGCGT
AACTAAGCGGAGTTGGGTACCCGGTGGGAGGTACCCGGTGGGACGATATGTCTGACCCGGGA



FIG. 9A

1 SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
1 TCCATTGAGACAATCACGCTCCCCCAGGATGCTGTCTCCGCACTAACGTCGGGGCAGG
AGGTAACTCTGTTAGTGCAGGGGGCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCC
61 ThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGly
61 ACTGGCAGGGGGAAAGCAGGCATCTACAGATTGTGGCACCGGGGAGCGCCCTCCGGC
TGACCGTCCCCCTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGAGGCC
121 MetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeu
121 ATGTTCGACTCGTCCGTCTGTGAGTGTATGACGCAGGCTGTGCTTGGTATGAGCT
TACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAG
181 ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProVal
181 ACGCCCAGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCCGTG
TGCGGGCGGCTCTGATGTCATCCGATGTCGATGTACTTGTGGGGCCCCGAAGGGCAC
241 CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
241 TGCCAGGACCATCTTGAATTGGGAGGGCGTCTTACAGGCCTCACTCATATAGATGCC
ACGGTCCTGGTAGAACCTAAACCCCTCCCGAGAAATGTCCGGAGTGAATATCTACGG
301 HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGln
301 CACTTCTATCCCAGACAAAGCAGAGTGGGAGAACCTCCTTACCTGGTAGCGTACCAA
GTGAAAGATAGGGCTGTTCGTCTACCCCTTTGGAAAGGAATGGACCATCGCATGGTT
361 AlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCys
361 GCCACCGTGTGCGCTAGGGCTCAAGCCCTCCCCATCGTGGGACCAGATGTGGAAGTGT
CGGTGGCACACCGCAGTCGGAGTTCGGGAGGGTAGCACCCCTGGTCTACACCTTCACA
421 LeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTryArgLeuGlyAla
421 TTGATTGCGCTCAAGCCCACCCCTCCATGGGCAACACCCCTGCTATACAGACTGGCGCT
AACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGA
481 ValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSer
481 GTTCAGAAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCGATGTC
CAAGTCTTACTTAGTGGACTGCGTGGGTCACTGGTTATGTAGTACTGTACGTACAGC
541 AlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeu
541 GCCGACCTGGAGGTGTCGTCACGAGCACCTGGGTGCTCGTTGGCGCGTCTGGCTGTTTG
CGGTGGACCTCCAGCAGTGTCTGGACCCACGAGCAACCGCCGAGGACCGACGAAAC
601 AlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGly
601 GCCGCGTATTGCGCTGTCACACAGGCTGCGTGGTCATAGTGGGAGGGTCGTTGTCCGGG
CGGCGCATAACGGACAGTTGTCGACGCACCCAGTATCACCGTCCCAGCAGAACAGGCC
661 LysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGlu
661 AAGCCGGCAATCATACCTGACAGGGAAAGTCTTACCGAGAGTTGATGAGATGGAAGAG
TTCGGCCGTTAGTATGGACTGTCCTCAGGGAGATGGCTCTCAAGCTACTTACCTTCTC
721 CysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGln
721 TGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTCAAGCAG
ACGAGAGTCGTGAATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTTGTC
781 LysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaVal
781 AAGGCCCTGGCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCGTGTC
TTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAG

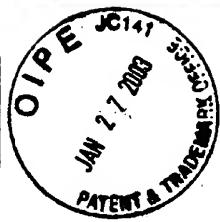


FIG. 9B

841 GlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSer
CAGACCAACTGGAAAAACTCGAGACCTCTGGGCGAAGCATATGTGGAACTTCATCAGT
GTCTGGTTGACCGTTTGAGCTCTGGAAGACCGCTCGTATACACCTTGAAGTAGTC
GlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeu
GGGATACAATACTTGGCGGGCTTGTCACCGCTGCCTGTAACCCGCCATTGCTTCATTG
CCCTATGTTATGAACCGCCCCGAACAGTTGCGACGGACCATTGGGGCGGTAAACGAAGTAAC
MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
ATGGCTTTACAGCTGCTGTCACCGCCACTAACCACTAGCCAAACCCCTCTCTTCAAC
TACCGAAAATGTCGACGACAGTGGTCGGTGATTGGTATCGGTTGGGAGGACAAGTTG
IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
ATATTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCGGTGCGCTACTGCCTTGTG
TATAACCCCCCACCACCGACGGGTCGAGCGGCCACGGCAGTACGGAAACAC
GlyAlaGlyLeuAlaAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
GGCGCTGGCTTAGCTGGCGCCGCATCGGCAGTGGACTGGGAAGGTCTCATAGAC
CCGCGACCGAATCGACCGCGCGTAGCCGTACAACCTGACCCCTCCAGGAGTATCTG
IleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSer
ATCCTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTTGTGGCATTCAAGATCATGAGC
TAGGAACGTCCCCATACCGCGCCCGACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCG
GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
GGTGAGGTCCCCCTCCACGGAGGACCTGGTCAATCTACTGCCGCATCCTCTGCCCGGA
CCACTCCAGGGGAGGTGCCTCTGGACCAGTTAGATGACGGCGGTAGGAGAGCGGGCCT
AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
GCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCGGCGAG
CGGGAGCATGCCGACACAGTCGTTATGACGCCGCGTGCAACCGGGCCCGCTC
GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
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CCCCGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGGAGGGCCCCCTGGTACAAAGGGG

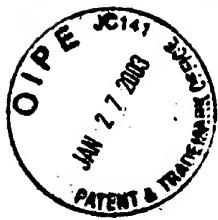


FIG. 10

LeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAsp
1 CTCGCCGCAAAAGCTGGTCGCATGGGCATCAATGCCGTGGCCTACTACCGGGTCTTGAC
GAGCGGGCGTTTGACCAGCGTAACCCGTAGTTACGGCACCAGGATGATGGGCCAGAACTG

ValSerValIleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThr
61 GTGTCCGGTCAATCCCACCCGACAGCGGGCATGGTGTGGCAACCGATGCCCTCATGAC
CACAGGCCAGTAGGGCTGGCTGGCGCTACAAACAGCAGCACCGTTGGCTACGGGAGTACTGG

GlyTyrThrGlyAspPheAspSerValIleAspTyrAsnThrCysValThrGlnThrVal
121 GGCTATAACGGCGACTTCGACTTGACTACAAATACGGTGTGGTGTAGACTACAAATACGGTGTGGCTGAGCCACTATCTGATGTTATGCCACACAGGGTCTGTCAAG
CGATAATGGCCGCTGAAGGCTGAGCCACTATCTGATGTTATGCCACACAGGGTCTGTCAAG

-----Overlap with
AspPheSerLeuAspProThrPheThrIleGluThrIleLeuProGlnAspAlaVal
181 GATTTCAGCCTTGACCCCTACCTTCACCATGAGACAATCACGGCTCCCCCAGGATGCTGTC
CTAAAGTCGGAACTGGGATGGAAAGTGGTAACTCTGTTAGTGGAGGGTCTACGACAG

clone 35-----
SerArgThrGlnArgArgGlyArgThr
241 TCCCCGCACTCAACGTCGGGGCAGGGACTG
AGGGCGGTGAGTTGCAGCCCCGTCCTGAC



FIG. 11

-----Overlap with 32-----

1 MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
GATGAACCGGCTGATAGCCTTCGCCTCCGGGGAAACCATGTTCCCCCACGCACTACGT
CTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGGTGCGTGATGCA
61 ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
GCCGGAGAGCGATGCAGCTGCCCGCTACTGCCATACTCAGCAGCCTCACTGTAACCCA
CGGCCTCTCGCTACGTCGACGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGT
121 LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
GCTCCTGAGGCAGTCACCAGTGGATAAGCTGGAGTGTACCACCTCCATGCTCCGGTTC
CGAGGACTCCGCTGACGTGGTACCTATTGAGCCTCACATGGTGAGGTACGAGGCCAAG
181 TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
CTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTGAGCGACTTTAAGACCTGGCT
GACCGATTCCCTGTAGACCCCTGACCTATACTGCTCCACAACTCGCTGAAATTCTGGACCAG
241 LysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyr
AAAAGCTAACGCTCATGCCACAGCTGCCCTGGGATCCCCTTGTGTCTGCCAGCGCGGGTA
TTTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTCGCGCCCAT
301 LysGlyValTrpArgVal
TAAGGGGGTCTGGCGAGTG
ATTCCCCAGACCGCTCAC

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1 AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
GGCTTACATGGCTCAAGGCTCATGGGATCGATCTAACATCAGGACCGGGGTGAGAACAAAT
CCGAATGTACAGGTTCGGAGTAGCTAGCTAGGATTGATTGAGCTCTGGCCCAACTCTTGTAA
61 ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
TACCACTGGCAGCCCCATCACGTACTCCACCTAACACTGCTCACGGTGAAGGTGCTACGGTGTAG
ATGGTGAACCGTGGGGTAGTGCATGGGTGGATGCCGTTCAAGGAACGGAAACGGCTGCCGCCAC
SerglyGlyAlaTyrAspIleIleIleCysAspGlyCysLysSerThrAspAlaThrSer
CTCGGGGGGGCCTTATGACATATAATTGACAGGTGACGGAGTGCCTACGGTACGGTACGGTACATC
GAGCCCCCGGAATACTGTATTAAACACTGCTCACGGTGAAGGTGCTACGGTGTAG
121 IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
CATCTTGGGCATGGCAGACTGTCCCTGACCAAGCAGAGACTGCGGGGGAGACTGGTTGT
GTAGAACCCGGTAGGCCGTGACAGGAACCTGGTTGCTCTGACGCCCGCTCTGACCAACA
LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluVal
GCTGCCACCGCCACCCCTCCGGCTCGGTCACTGTGCCCATCCAAACATCGAGGAGGT
CGAGGGGTGGCGGTGGGGAGGGCCGAGGGCACTGACACGGGTAGGGTTGCTCTCCA
181 AlaLeuSerThrThrGlyGluIleProPheTyrglyLysAlaIleProLeuGluValIle
TGCTCTGTCCACCACGGAGAGATCCCTTTAACGGCAAGGCTATCCCCCTCGAAGTAAT
ACGAGACAGGTGGTGGCCCTCTAGGGAAAATGGCGTCCGATAGGGGAGCTTCATA

361 LysGlyGlyArgHisLeuIlePheCysHisSerLysLysCysAspGluLeuAlaAla
CAAGGGGGGGAGACATCTCATCTGTCAATTCAAAGAAGAAGTGGGACGAACACTGGCCGC
GTTCCCCCCTCTGTAGAGTAGAAAGACAGTAAGTTCTTACGGCAAGGCTATGGGGATGATGGGCACAGGCA
421 -----Overlap with 37b-----
LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
AAAGCTGGTGGCATGGCATTGGCATCAATGGCCTACTACCGGGTCTTGACGTTGCTGGCG
TTTGGGACCCAGCGTAACCCGTAGTTACGGCACCCGTACTGGGATGATGGGCACAGGCA
481 -----IleProThr-----
CATCCCCGACCAAG
GTAGGGCTGGTC

FIG. 12



FIG. 13

 1 CysSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCys
 1 ACTGCAGCCTCACTGTAACCCAGCTCCTGAGGCAGCTGCACCACTGGATAAGCTCGGAGT
 TGACGTCGGAGTGACATTGGTCGAGGACTCCGCTGACGTGGTACCTATTGAGCCTCA

 61 ThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeu
 61 GTACCACTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGACTGGATATGGAGGTGT
 CATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATACGCTCCACA.
 -----Overlap with 33b-----
 121 SerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPhe
 121 TGAGCGACTTAAAGACTGGCTAAAAGCTAAGCTCATGCCACAGCTGCCCTGGATCCCC
 ACTCGCTGAAATTCTGGACCGATTTCGATTCGAGTACGGTGTGACGGACCCCTAGGGGA

 181 ValSerCysGlnArgGlyTyrLysGlyValTrpArgGlyAspGlyIleMetHisThrArg
 181 TTGTGTCCTGCCAGCGGGTATAAGGGGTCTGGCGAGGGGACGGCATCATGCACACTC
 AACACAGGACGGTCGCGCCCATATTCCCCAGACCGCTCCCTGCCGTAGTACGTGTGAG
 241 CysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGly
 241 GCTGCCACTGTGGAGCTGAGATCACTGGACATGTAAAAACGGGACGATGAGGATCGTCG
 CGACGGTACACCTCGACTCTAGTGACCTGTACAGTTTGCCCTGCTACTCCTAGCAGC
 301 ProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGly
 301 GTCCTAGGACCTGCAGAACATGTGGAGTGGACCTTCCCATTAAATGCCCTACACCACGG
 CAGGATCCTGGACGTCTGTACACCTCACCCCTGGAAAGGGTAATTACGGATGTGGTGCC
 361 ProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGlu
 361 GCCCCTGTACCCCCCTCCTGCCCGAACACTACACGTTCGCGCTATGGAGGGTGTCTGCAG
 CGGGGACATGGGGGAAGGACGGCTTGATGTGCAAGCGCGATACTCCCACAGCGTC
 421 GluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAsp
 421 AGGAATATGTGGAGATAAGGCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTG
 TCCTTATACACCTCTATTCCGTCCACCCCTGAAGGTATGCACTGCCCATACTGATGAC
 481 AsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
 481 ACAATCTCAAATGCCGTGCCAGGTCCCCTGCCCGAATTTTACAGAAAT
 TGTTAGAGTTACGGGCACGGTCCAGGGTAGCGGGCTAAAAAGTGTCTTA



FIG. 14A

AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
1 TGCTTACATGTCCAAGGCTCATGGGATGATCCTAACATCAGGACCGGGTGAAGAACAAAT
ACGAATGTACAGGTTCCGAGTACCCCTAGCTAGGATTGTAGTCCTGGCCCCACTCTTGT
ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
61 TACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTCTTGCCGACGGCGGGTG
ATGGTGACCGTCGGGGTAGTGCATGAGGTGGATGCCCTCAAGGAACGGCTGCCGCCAC
SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
121 CTCGGGGGGCGCTTATGACATAATAATTGTGACGAGTGCCTACGGATGCCACATC
GAGCCCCCGCGAATACTGTATTAAACACTGCTACGGTGAGGTGCCTACGGTAG
IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
181 CATCTTGGGCATCGGCACTGTCTTGACCAAGCAGAGACTGCGGGGGCAGACTGGTTGT
GTAGAACCCGTAGCCGTGACAGGAACCTGGTCGTCTGACGCCCGCTTGACCAACA
LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
241 GCTCGCCACCGCCACCCCTCCGGCTCCGTCACTGTGCCCATCCAAACATCGAGGAGGT
CGAGCGGTGGCGGTGGGGAGGCCGAGGCAGTGACACGGGGTAGGGTTGTAGCTCTCCA
AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
301 TGCTCTGTCCACCACCGGAGAGATCCCTTTACGGCAAGGCTATCCCCCTCGAAAGTAAT
ACGAGACAGGTGGTGGCTCTAGGGAAAAATGCCGTCCGATAGGGGGAGCTTCATTA
LysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAla
361 CAAGGGGGGAGACATCTCATCTTGTCAATTCAAAGAAGAAGTGCAGCAACTCGCCGC
GTTCCCCCTCTGTAGAGTAGAACAGTAAGTTCTTCACGCTGCTTGAGCGGG
LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
421 AAAGCTGGTCGCATTGGGCATCAATGCCGTGGCCTACTACCGCGGTCTGACGTGTCCGT
TTCGACCAGCGTAACCCGTAGTTACGGCACCGGATGATGGCGCCAGAACTGCACAGGCA
IleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThrGlyTyrThr
481 CATCCCGACCAAGCGGCATGTTGTCGTGGCAACCGATGCCCTCATGACGGCTATAC
GTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTTGGCTACGGAGTACTGCCGATATG
GlyAspPheAspSerValIleAspTyrAsnThrCysValThrGlnThrValAspPheSer
541 CGGGCAGTCGACTCGGTGATAGACTACAATACGTGTGTCACCCAGACAGTCGATTTAG
GCCGCTGAAGCTGAGCCACTATCTGATGTTATGCACACAGTGGGCTGTCACTAAAGTC
LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
601 CCTTGACCCCTACCTTACCAATTGAGACAATCACGCTCCCCCAGGATGCTGTCTCCCGCAC
GGAACCTGGGATGGAAGTGGTAACCTGTAGTGCAGGGGGTCCTACGACAGAGGGCGTG
GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
661 TCAACGTCGGGGCAGGACTGGCAGGGGAAGCCAGGCATCTACAGATTGTGGCACCGGG
AGTTGCAGCCCCCTCTGACCGTCCCCCTCGGTCCGTAGATGTCTAAACACCGTGGCCC
GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
721 GGAGCGCCCCCTCGGCATGTTGACTCGTCCGTCTGTGAGTGTCTATGACGCAGGCTG
CCTCGGGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGAC
AlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThr
781 TGCTTGGTATGAGCTACGCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACAC
ACGAACCATACTCGAGTGCAGGGCGGCTGTGATGTCATCCGATGCTCGATGTACTTG
ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
841 CCCGGGGCTTCCGTGTGCCAGGACCATCTGAATTGGGAGGGCGTCTTACAGGCC
GGGCCCCGAAGGGCACACGGTCTGGTAGAACACTTAAACCCCTCCCGCAGAAATGTCCGGA

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FIG. 14B

ThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAspLeuProTyr
901 CACTCATATAGATGCCACTTCTATCCAGACAAAGCAGAGTGGGGAGAACCTCTTA
GTGAGTATATCTACGGGTGAAAGATAGGGCTGTTCTCACCCCTCTGGAAAGGAAT
LeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAsp
961 CCTGGTAGCGTACCAAGCCACCGTGTGCGCTAGGGCTCAAGCCCCTCCCCATCGTGGGA
GGACCATCGCATGGTCGGTGGCACACGCGATCCGAGTTGGGGAGGGGGTAGCACCT
GlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeu
1021 CCAGATGTGGAAGTGTGATTGCGCTAACGCCCACCCCTCATGGCCAACACCCCTGCT
GGTCTACACCTCACAAACTAACGGAGTTGGGTGGGAGGTACCCGGTTGGGGACGA
TyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrile
1081 ATACAGACTGGCGCTGTTCAAGAATGAAATCACCTGACGACCCAGTCACCAAATACAT
TATGTCTGACCCGCGACAAGTCTACTTAGTGGACTGCGTGGTCAGTGGTTATGTA
MetThrCysMetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGly
1141 CATGACATGATGTCGGCCGACCTGGAGGTCGTACGAGCACCTGGTGTCTCGTGGCGG
GTACTGTACGTACAGCCGGCTGGACCTCCAGCAGTGTGCTGGACCCACGAGCAACC
ValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArg
1201 CGTCCTGGCTGCTTGGCCGCGTATTGCGCTGTCAACAGGCTCGTGGTCAGTGGGAG
GCAGGACCGACGAAACGGCGCATAACGGACAGTTGTCGACGCAACAGTATCACCGTC
ValValLeuSerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPhe
1261 GGTGCGTCTTGTCCGGGAAGCCGGCAATCATACCTGACAGGGACTGCTCTACCGAGAGTT
CCAGCAGAACAGGCCCTCGGCCGTTAGTATGGACTGTCCTCAGGAGATGGCTCTCAA
AspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAla
1321 CGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGC
GCTACTCTACCTTCTCACGAGAGTCGTGAATGGCATGTAGCTGTTCCCTACTACGAGCG
GluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluVal
1381 CGAGCAGTTCAAGCAGAAGGCCCTCGGCCCTCTGCAGACCGCGTCCCGTCAGGCAGAGGT
GCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGGACGTCGGCGCAGGGCAGTCCGTC
IleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMet
1441 TATCGCCCCCTGCTGTCCAGACCAACTGGAAAAACTCGAGACCTTCTGGCGAAGCATAT
ATAGCGGGGACGACAGGGTCTGGTTGACCGTTTGAGCTCTGAAAGACCCGCTCGTATA
TrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnPro
1501 GTGGAACTTCATCAGTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCC
CACCTTGAAGTAGTCACCCCTATGTTATGAACCGCCCCAACAGTTGCGACGGACCATTGGG
AlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
1561 CGCCATTGCTTCATTGATGGCTTTACAGCTGCTGTACCAAGCCCACTAACCACTAGCCA
GCGGTAACGAAGTAACTACCGAAAATGTCGACGACAGTGGTCGGGTATTGGTGATCGGT
ThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAla
1621 AACCCCTCCTTCAACATATTGGGGGGTGGGTGGCTGCCAGCTCGCCGCCGGTGC
TTGGGAGGGAGAAGTTGATAACCCCCCCCCACCCACCGACGGGTGAGCGGGCGGGGCCACG
AlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGly
1681 CGCTACTGCTTGTGGCGCTGGCTTAGCTGGCGCCCATCGGAGTGTGGACTGGG
GCGATGACGAAACACCCGCGACCGAATCGACCGCGGGTAGCCGTACAACCTGACCC



FIG. 14C

1741 LysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAla
 GAAGGTCCCTCATAGACATCCTGCAGGGTATGGCGGGCGTGGCGGGAGCTCTTGTGGC
 CTTCCAGGAGTATCTGTAGGAACGTCCCATACCGCGCCCGACCGCCCTCGAGAACACCG

 1801 PheLysIleMetSerGlyGluValProSerThrGluAspLeuValAsnLeuLeuProAla
 ATTCAAGATCATGAGCGGTGAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCG
 TAAGTTCTAGTACTCGCCACTCAGGGGAGGTGCCTCTGGACCAGTTAGATGACGGGC

 1861 IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
 CATCCTCTCGCCCCGGAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCA
 GTAGGAGAGCGGGCCCTGGGAGCATCAGCCGACCCAGACACGTCGTTATGACGCGGCCGT

 1921 ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
 CGTTGGCCCGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCG
 GCAACCGGGCCCGCTCCCCCGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGC

 1981 GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
 GGGGAACCATGTTCCCCACGCACTACGTGCCGGAGAGCGATGCAGCTGCCCGTCAC
 CCCCTGGTACAAAGGGGGTGCCTGATGCACGGCCTCGCTACGTCGACGGCGAGTG

 2041 AlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
 TGCCATACTCAGCAGCCTCACTGTAACCCAGCTCTGAGGCAGTCACCACTGGATAAG
 ACGGTATGAGTCGTCGGAGTGACATTGGGTCGAGGACTCCGCTGACGTGGTCACCTATT

 2101 SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
 CTCGGAGTGTACCACTCCATGCTCCGGCTCTGGCTAAGGGACATCTGGACTGGATATG
 GAGCCTCACATGGTGAGGTACGAGGCAAGGACCGATTCCCTGAGACCTGACCTATAC

 2161 GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
 CGAGGTGTTGAGCGACTTAAAGACCTGGCTAAAGCTAAGCTCATGCCACAGCTGCCTGG
 GCTCCACAACTCGCTGAAATTCTGGACCGATTTCGATTGAGTACGGTGTGACGGAC

 2221 IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
 GATCCCCTTGTGTCCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATCAT
 CTAGGGGAAACACAGGACGGTCGCCCATATTCCCCAGACCGCTCACCTGCCGTAGTA

 2281 HisThrArgCysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArg
 GCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAACGGGACGATGAG
 CGTGTGAGCGACGGTACACCTCGACTTAGTGACCTGTACAGTTTGCCCTGCTACTC

 2341 IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
 GATCGTCGGTCCCTAGGACCTGCAGGAACATGTGGAGTGGACCTCCCCATTAATGCCCA
 CTAGCAGCCAGGATCTGGACGTCCTGTACACCTCACCCCTGGAAGGGTAATTACGGAT

 2401 ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
 CACCACGGGCCCCCTGTACCCCCCTTCCTGCAGCGAACACTACACGTTCGCGCTATGGAGGGT
 GTGGTGCCGGGGACATGGGGGAAGGACGGCTTGTGCAAGCGCGATACCTCCCA

 2461 SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
 GTCTGCAGAGGAATATGTGGAGATAAGGCAGGTGGGGACTTCCACTACGTGACGGGTAT
 CAGACGTCTCCTTATACACCTTATTCCGTCACCCCTGAAGGTGATGCACTGCCATA

 2521 ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
 GACTACTGACAATCTCAAATGCCGTGCCAGGTCCCCTGCCCGAATTTCACAGAAAT
 CTGATGACTGTTAGAGTTACGGGCACGGTCCAGGGTAGCGGGCTAAAAAGTGTCTTA



FIG. 15

1 AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThr
1 GGCGGTGGACTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTTCAC
CCGCCACCTGAAATAGGGACACCTTGGATCTCTGTTGGTACTCCAGGGGCCACAAGTG
AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
61 GGATAACTCCTCTCCACCAAGTAGTGCCTCAGAGCTTCAGGTGGCTCACCTCCATGCTCC
CCTATTGAGGAGAGGTGGTATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGG
ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
121 CACAGGCAGCGGCAAAAGCACCAAGGTCCCAGGCTGCATATGCAGCTCAGGGCTATAAGGT
GTGTCCCGTCGCCGTTCTGGTTCCAGGGCCGACGTACGTCGAGTCCCAGTATTCCA
LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
181 GCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTGGTCTTACATGTCCAAGGC
CGATCATGAGTTGGGAGACAACGACGTTGTACCCGAAACCACGAATGTACAGGTTCCG
-----Overlap with 40b-----
HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
241 TCATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCCAT
AGTACCCCTAGCTAGGATTGTAGTCCTGGCCCCACTTTGTTAACATGGTACCGTCGGGGTA
ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
301 CACGTACTCCACCTACGGCAAGTTCTTGCCGACGGCGGGTGCTCGGGGGCGCTTATGA
GTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAATACT
IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
361 CATAATAATTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCAC
GTATTATTAAACACTGCTCACGGTGGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTG
ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValLeuAlaThrAlaThrPro
421 TGTCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCC
ACAGGAACCTGGTTGCTCTGACGCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGG
ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGly
481 TCCGGGCTCCGTCACTGTGCCCATCCAAACATCGAGGAGGTTGCTCTGTCACCCACCGG
AGGCCCCGAGGCAGTGACACGGGTAGGGTTAGCTCCTCCAACGAGACAGGTGGTGGCC
GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
541 AGAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCT
TCTCTAGGGAAAAATGCCGTTCCGATAGGGGAGCTTCATTAGTTCCCCCTCTGTAGA
IlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
601 CATCTTCTGTCATTCAAAGAAGAAGTGCACGAACTCGCCGCAAAGCTGGTCGCAATTGGG
GTAGAAGACAGTAAGTTCTTCTCACGCTGTTGAGCGGGCGTTCGACCGAGCGTAACCC
IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
661 CATCAATGCCGTGGCTACTACCGCGGTCTGACGTGTCGTCATCCGACCGCGGA
GTAGTTACGGCACCGGATGATGGCGCCAGAACACTGCACAGGCAGTAGGGCTGGTCGCCGCT
ValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
721 TGTTGTCGTCGTGGCAACCGATGCCCTCATGACCGGCATACCGGCAGCTTCGACTCGGT
ACAAACAGCAGCACCGTTGGTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCA
IleAspCysAsnThrCys
781 GATAGACTGCAATACGTGT
CTATCTGACGTTATGCACAC



FIG. 16

1 ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIlePro
 1 CTCCCTGCACCTTGC GGCTCCTCGGACCTTACCTGGTCACGAGGCACGCCGATGTCATT
 GAGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAGTGCTCCGTGCGGCTACAGTAAG
 61 ValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeu
 61 CCGTGC GCGCCGGCGGGGTGATAGCAGGGCAGCCTGCTGCGCCCGGCCATTCTACT
 GGCACGCGGCCGCCACTATCGTCCCCGTCGGACGACAGCGGGCCGGTAAAGGATGA
 121 LysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArg
 121 TGAAAGGCTCTCGGGGGTCCCGTGTGTCGCCCCGCGGGCACGCCGTGGCATATT
 ACTTTCGAGGGAGCCCCCAGGCACAACACGGGGGCCCGTGC GGACCCGTATAAAAT
 181 AlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeu
 181 GGGCCGCGGTGTGCACCCGTGGAGTGGCTAAGCGGGTGGACTTTATCCCTGTGGAGAAC
 CCCGGCGCACACGTGGGCACCTCACCGATTCCGCCACCTGAAATAGGGACACCTCTTGG
 241 33C-----Overlap with
 241 GluThrThrMetArgSerProValPheThrAspAsnSer
 241 TAGAGACAACCATGAGGTCCCCGGTGGTACCGATAACTCCTC
 ATCTCTGTTGGTACTCCAGGGGCCACAAGTGCCTATTGAGGAG

FIG. 17

1 GlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGly
 1 GGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGGCTCCTAGG
 CCCCACCTCCAACGACCGCGGGTAGTGCCGCATGCGGGTCGTCTGTTCCCCGGAGGATCC
 61 CysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIle
 61 GTGCATAATCACCAAGCTAACTGGCCGGACAAAAACCAAGTGGAGGGTGAGGTCCAGAT
 CACGTATTAGTGGTCGGATTGACCGGCCCTGTTGGTACCTCCACTCCAGGTCTA
 121 ValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrVal
 121 TGTTGCAACTGCTGCCAAACCTTCCCTGGCAACGTGCATCAATGGGTGTGCTGGACTGT
 ACACAGTTGACGACGGTTGGAAAGGACC GTGACGTAGTTACCCACACGACCTGACA
 181 TyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyr
 181 CTACCAACGGGGCCGGAACGAGGACCATCGCGTCACCCAAAGGGTCTGTCAATCCAGATGTA
 GATGGTGCCCCGGCTTGCTCCTGGTAGCGCAGTGGGTTCCCAGGACAGTAGGTCTACAT
 241 ThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThr
 241 TACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCGCAAGGTAGCCGCTATTGAC
 ATGGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGGC GTTCCATCGGGAGTAAC TG
 301 -----Overlap with 8h-----
 301 ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
 301 ACCCTGCACCTTGC GGCTCCTCGGACCTTACCTGGTCACGAGGCACG
 TGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAGTGCTCCGTGC



FIG. 18

1 AsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeu
1 GAACATGTGGAGTGGGACCTCCCCATTAAATGCCCTACACCACGGGCCCCCTGTACCCCCCT
CTTGTACACCTCACCCCTGGAGGGGTAATTACGGATGTGGTGCCCCGGGGACATGGGGGA

-----Overlap with 25c-----

61 ProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIle
61 TCCTGCGCCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGAT
AGGACGCGGCTTGATGTGCAAGCGCGATACTCCCCACAGACGTCTCCTATGCACCTCTA

121 ArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysPro
121 AAGGCAGGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTAAATGCC
TTCCGTCCACCCCCCTGAAGGTGATGCACTGCCCATACTGATGACTGTTAGAATTACGGG

181 CysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPhe
181 GTGCCAGGTCCCCTGCAGCCCCGAATTTTCACAGAAATTGGACGGGGTGCCTACATAGGGT
CACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCACGCGGATGTATCCAA

241 AlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGlu
241 TGCGCCCTCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGA
ACGGGGGGGACGTTGGAACGACGCCCTCCATAGTAAGTCTCATCCTGAGGTGCT

301 TyrProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSer
301 ATACCCGGTAGGGTCGCAATTACCTTGCAGGCCGAACGGACGTGGCGTGTGACGTC
TATGGGCCATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGACAACGTCAG

361 MetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGly
361 CATGCTACTGATCCCTCCCATAAACAGCAGAGGGCGCCGGCGAAGGTTGGCGAGGGG
GTACGAGTGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCGCTTCCAACCGCTCCCC

421 SerProProSerValAlaSerSerAlaSerGlnLeuSerAlaProSerLeuLysAla
421 ATCACCCCCCTCTGCGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGC
TAGTGGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCAGGGTAGAGAGTTCCG

481 ThrCysThrAlaAsnHisAspSerProAsp
481 AACTTGCACCGCTAACCATGACTCCCCCTGAT
TTGAACGTGGCGATTGGTACTGAGGGGACTA



FIG. 19

-----Overlap with 14c-----

1 SerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThrAlaAspHis
1 AGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGCACCGCTAACCAT
TCGAGGAGCCGATCGGTGATAGGCAGGGTAGAGAGAGTCCGTTAACCGTGGCGATTGGTA
61 AspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlu
61 GACTCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCAGGAGATGGCGGC
CTGAGGGGACTACGACTCGAGTATCTCCGGTGGAGGATACCTCCGTCTACCCGCCG
121 AsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPheAspProLeu
121 AACATCACCAAGGGTTGAGTCAGAAAAACAAAGTGGTATTCTGGACTCCTCGATCCGCTT
TTGTAGTGGTCCCAACTCAGTCTTGTGTTACCACTAACGACCTGAGGAAGCTAGGC
181 ValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArgLysSerArg
181 GTGGCGGAGGGAGGACGAGCAGCGGGAGATCTCCGTACCCGAGAAATCCTGCGGAAGTCTCGG
CACCGCCTCCTCGCTCGCCCTAGAGGCATGGCGTCTTAGGACAGCCTCAGAGCC
241 ArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProProLeuValGlu
241 AGATTGCCAGGCCCTGCCGTTGGCGCGCCGGACTATAACCCCCCGCTAGTGGAG
TCTAACGGGTCCGGGACGGCAAACCCGCGCCGGCTGATATTGGGGGCGATCACCTC
301 ThrTrpLysLysProAspTyrGluProProValValHisGlyCysProLeuProProPro
301 ACGTGGAAAAAGCCCAGTACGAACCACCTGTGGTCCATGGCTGTCGCTTCCACCTCCA
TGCACCTTTTGGGCTGATGCTTGGGACACCAGGTACCGACAGGCGAAGGTGGAGGT
361 LysSerProProValPro
361 AAGTCCCTCCTGTGCCG
TTCAGGGGAGGGACACGGC

FIG. 20

-----ValTrpAlaArgProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyr-----

1 CGTTGGCGCGGCCGGACTATAACCCCCCGCTAGTGGAGACGTGGAAAAAACCGACTA
GCAAACCGCGCCGGCTGATATTGGGGGGCGATCACCTCTGCACCTTTTGGCTGAT

-----Overlap with 8f-----

61 GluProProValValHisGlyCysProLeuProProProLysSerProProValProPro
61 CGAACCCACCTGTGGTCCATGGCTGCCGCTTCCACCTCCAAAGTCCCTCCTGTGCCTCC
GCTTGGTGGACACCAGGTACCGACGGCGAAGGTGGAGGTTCAAGGGAGGACACGGAGG
121 ProArgLysLysArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGlu
121 GCCTCGGAAGAACGGACGGTGGCTCTCACTGAATCAACCTATCTACTGCCTTGGCCGA
CGGAGCCTTCTCGCCTGCCACCAGGAGTGACTTAGTTGGATAGATGACGGAACCGGCT
181 LeuAlaThrArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThr
181 GCTCGCCACCAAGAAGCTTGGCAGCTCCTCAACTCCGGCATTACGGGCACAATACGAC
CGAGCGGTGGCTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTG
241 ThrSerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerPhe
241 AACATCCTCTGAGCCCGCCCCCTCTGGCTGCCCGACTCCGACGCTGAGTCCTTGC
TTGAGGAGACTCGGGCGGGGAAGACCGACGGGGGGCTGAGGCTGCGACTCAGGAAACG



FIG. 21

1 AlaSerArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrThr
 1 GCCTCCAGAAGCTTGGCAGCTCTCAACTTCCGGCATTACGGGCACAATACGACAACA
 CGGAGGTCTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTTTATGCTGTTGT

-----Overlap with 33f-----

61 SerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSer
 61 TCCTCTGAGCCGCCCTCTGGCTGCCGACGCTGAGTCCTATTCCCTCC
 AGGAGACTCGGGCGGGGAAGACCGACGGGGGCTGAGGCTGCGACTCAGGATAAGGAGG

121 MetProProLeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThr
 121 ATGCCCCCCCCTGGAGGGGGAGCCTGGGATCCGGATCTTAGCGACGGTCATGGTCAACG
 TACGGGGGGGACCTCCCCCTCGAACCCCTAGGCCCTAGAACATCGCTGCCAGTACCGAGTTGC

181 ValSerSerGluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThr
 181 GTCACTAGTGAGGCCAACCGGGAGGATGTCGTGCTGCTCAATGCTTACTCTGGACA
 CAGTCATCACTCCGGTTGCGCCTACAGCACACGACGAGTTACAGAATGAGAACCTGT

241 GlyAlaLeuValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSer
 241 GGCGCACTCGTCACCCCGTGCGCCGCGGAAGAACAGAAACTGCCATCAATGCACTAACG
 CCGCGTGAGCAGTGGGGCACGCGGCGCTTCTGTCTTGACGGTAGTTACGTGATTG

301 AsnSerLeuLeuArgHisHisAsnLeuValTyrSerThrThrSerArgSer
 301 AACTCGTTGCTACGTACCCACAATTGGTAGAGTGAGGAGAACCGCTCACGCACTG
 TTGAGCAACGATGCAGTGGTAAACCACATAAGGGTAGTGGAGTGCAC

FIG. 22

1 GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg
 1 GGCACCTATGTTATAACCATCTGACTCCTCTCGGACTGGGCGACAACGGCTTGCAG
 CGTGGATACAAATATTGGTAGAGTGAGGAGAACCGCTGACCCGCGTGTGCCGAACGCT

61 AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
 61 GATCTGGCCGTGGCTGTAGAGCCAGTCGTTCTCCCAAATGGAGACCAAGCTCATCACG
 CTAGACCGGCACCGACATCTCGGTACAGCAGAACAGGGTTACCTCTGGTTGAGTAGTGC

121 TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
 121 TGGGGGGCAGATACCGCCGCGTGCCTGACATCATCACGGCTTGCCTGTTCCGCCCG
 ACCCCCCGTCTATGGCGCGCACGCCACTGTAGTTGCCAACGGACAAAGGCGGGCG

181 ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
 181 AGGGGCCGGGAGATACTGCTCGGGCCAGCCGATGGAATGGTCTCCAAGGGTTGGAGGTTG
 TCCCCGGCCCTCTATGACGAGCCGGTCGGCTACCTTACCAAGAGGTTCCAACCTCCAAC

241 LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
 241 CTGGCGCCCATCACGGCGTACGCCAGCAGAACAGGGCCTCCTAGGGTGCATAATCACC
 GACCGCGGGTAGTGCCTGATGCCTGCTGTTCCCCGGAGGATCCCACGTATTAGTGG

-----Overlap with 7e-----

301 SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
 301 AGCCTAACTGGCCGGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGTCACGTGCT
 TCGGATTGACCGGCCCTGTTGGTACCTCCACTCCAGGTCTAACACAGTTGACGGA

361 AlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrp
 361 GCCCAAACCTTCCCTGGCAACGTGCATCAATGGGTGCTGCTGG
 CGGGTTGGAGGACCGTTGCACGTAGTTACCCACACGACC



FIG. 23

1 GlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyr
 1 GGCGGTGTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTCACCATATTACAAGCGCTAT
 CCGCCACAACAAGAGCAGCCCCACTACCGCGACTGAGACAGTGGTATAATGTTCGCGATA

 61 IleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHis
 61 ATCAGCTGGTGCTTGTTGGCTTCAGTATTTCTGACCAGAGTGGAAAGCGCAACTGCAC
 TAGTCGACCACGAAACACCACCGAAGTCATAAAAGACTGGTCTACCTTCGCGTTGACGTG

 121 ValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeuMetCys
 121 GTGTGGATTCCCCCCCCTAACGTCCGAGGGGGCGCGACGCCGTATCTTACTCATGTGT
 CACACCTAACGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAGTAGAATGAGTACACA

 181 AlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPheGlyPro
 181 GCTGTACACCCGACTCTGGTATTTGACATACCAAAATTGCTGCTGGCGTCTCGGACCC
 CGACATGTGGGCTGAGACCATAAAACTGTAGTGGTTAACGACGACCGGCAGAACGCTGGG

 241 LeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGlnGlyLeu
 241 CTTGGATTCTTCAAGCCAGTTGCTAAAGTACCCCTACTTTGTGCGCGTCCAAGGCCT
 GAAACCTAACGAAAGTCGGTAAACGAATTTCATGGGATGAAACACGCGCAGGTTCCGAA

 301 LeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMetValIle
 301 CTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTGCAAATGGTCATC
 GAGGCCAAGACGCGCAATCGGCCCTTACTAGCCTCCGGTAATGCACGTTACCGAGTAG

 361 IleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeuArgAsp
 361 ATTAAGTTAGGGCGCTTACTGGCACCTATGTTATAACCATCTCACTCCCTTCGGGAC
 TAATTCAATCCCCCGGAATGACCGTGGATACAAATATTGGTAGAGTGAGGAGAACCCCTG

 421 -----Overlap with 7f-----
 421 TrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGln
 421 TGGGCGCACACGGCTTGCAGATCTGGCGTGGCTGTAGAGCCAGTCGCTCTCTCCAA
 ACCCGCGTGTGCCGAACGCTCTAGACCGGCACCGACATCTGGTCAGCAGAACAGGGTT

 481 -----
 481 MetGluThrLysLeuIleThrTrpGly
 481 ATGGAGACCAAGCTCATCACGTGGGGGGC
 TACCTCTGGTTCGAGTAGTGCACCCCCCG

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FIG. 24

1 GluTyrValValLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
 1 GGGAGTACGTCGTTCTCCTGTTCTGCTTGAGACGCGCGCGTCTGCTCCTGCTTG
 61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
 61 GGATGATGCTACTCATATCCAAGCGGGAGGCGGCTTGGAGAACCTCGTAATACTTAATG
 121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
 121 CAGCATCCCTGGCGGGACGCACGGCTTGTATCCTTCCTCGTGTCTCTGCTTGCAT
 181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
 181 GGATTTGAAGGGTAAGTGGGTGCCCGAGCGGTCTACACCTCTACGGGATGTGGCCTC
 241 LeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
 241 TCCCTCTGCTCCTGTTGGCGTTGGCCAGCGGGCTGCCAGATGTGGAGATGCCCTACACCGGAG
 301 SerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
 301 CGTCGTGTGGCGGTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTCACCATATTACA
 361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGln
 361 AGCGCTATATCAGCTGGCTTGTGGCTTCAGAA
 TCGCGATATAGTCGACCACGAACACCACCGAAGTCTT

-----Overlap with 11b-----

FIG. 25

1 ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
 1 CCAGCCCCCTCTGGCTGCCCCCCCAGCTCCGACGCTGAGTCCTATTCCATGCC
 61 LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
 61 CTGGAGGGGGAGCCTGGGATCCGGATCTAGCGACGGGTCTGGTCAACAGTCAGTAGT
 121 GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
 121 GAGGCCAACCGCGGAGGATGCGTGTGCTCAATGCTCTACTCTGGACAGCGCACTC
 181 ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
 181 GTCACCCCCGTGCGCCGCGGAAGAACAGAAACTGCCATCAATGCACTGAGCAACTCGTT
 241 LeuArgHisHisAsnLeuValTyrSerThrSerArgSerAlaCysGlnArgGlnLys
 241 CTACGTACACACAATTGGTGTATTCCACCCACCTACCGCAGTGCTGCCAAAGGCAGAAC
 301 LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGly
 301 AAAGTCACATTGACAGACTGCAAGTTCTGGACAGCCATTACCAAGGACGTACTCAAGGAG
 361 ValLysAlaAlaAlaSerLysValLysAlaAsnPhe
 361 GTTAAAGCAGCGCGTCAAAAGTGAAGGCTAACTTC
 CAATTCGTCGCCGCAGTTTCACTTCCGATTGAAG

-----Overlap with 33g-----



FIG. 26A

1 GluTyrValValLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
 1 GGGAGTACGTCGTTCTCCTGTTCTGCTTGAGACGCGCGCGTCTGCTCCTGTTGT
 CCCTCATGCAGCAAGAGGAACAAGGAAGACGAACGCTCTGCAGCGCGAGACGAGGAACA
 61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
 61 GGATGATGCTACTCATATCCCAAGCGGAGGCAGCTTGGAGAACCTCGTAATACTTAATG
 CCTACTACGATGAGTATAGGGTTCGCTCCGCCGAAACCTTGGAGCATTATGAATTAC
 121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
 121 CAGCATCCCTGGCCGGAGCGCACGGTCTTGTATCCTCCTGCTGTTCTGCTTTGCAT
 GTCGTAGGGACCGGCCCTGCGTGCAGAACATAGGAAGGAGCACAAGAACGAAACGTA
 181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
 181 GGTATTGAAAGGGTAAGTGGGTGCCCCGGAGCGGGTCTACACCTCTACCGGGATGTGGCCTC
 CCATAAACTTCCCATTCAACCCACGGGCCTCGCCAGATGTGGAAGATGCCCTACACCGGAG
 241 LeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
 241 TCCTCCCTGCTCCTGTTGGCGTTGCCCCAGCGGGCGTACGCGCTGGACACGGAGGTGGCCG
 AGGAGGACGAGGACAACCGCAACGGGTCGCCCCGATGCGCACCTGTGCCTCCACCGGC
 301 SerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
 301 CGTCGTGGCGGTGTTCTCGTGGGTTGATGGCGCTGACTCTGTCACCATATTACA
 GCAGCACACCGCCACAACAAGAGCAGCCAACTACCGCGACTGAGACAGTGGTATAATGT
 361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGln
 361 AGCGCTATATCAGCTGGTCTTGGGTGGCTTCAGTATTTCTGACCAGAGTGGAAAGCGC
 TCGCGATATAGTCGACACAGAACACCACCGAAGTCATAAAAGACTGGTCTCACCTCGCG
 421 LeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeu
 421 AACTGCACGGTGTGGATTCCCCCCCCTCAACGTCGAGGGGGGCGCAGCGCGTACCTAC
 TTGACGTGACACCTAACGGGGGGAGTTGCAGGCTCCCCCGCCTGCGGAGTAGAATG
 481 MetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPhe
 481 TCATGTTGCTGTACACCCGACTCTGGTATTGACATCACAAATTGCTGCTGGCCGTCT
 AGTACACACGACATGTGGGCTGAGACCATAAAACTGTAGTGGTTAACGACGACCAGCAGA
 541 GlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGln
 541 TCGGACCCCTTGGATTCTCAAGCCAGTTGCTTAAAGTACCCACTTGTGCGCGTCC
 AGCCTGGGAAACCTAACAGATTGCGTCAAACGAATTGAAACACGCGCAGG
 601 GlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMet
 601 AAGGCCTTCTCGGTTCTGCGCTTAGCGCGGAAGATGATCGGAGGCCATTACGTGCAAA
 TTCCGGAAAGAGCCAAGACGCGCAATCGCGCTTACTAGCCTCCGTAATGCACGTTT
 661 ValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeu
 661 TGGTCATCATTAAGTAAAGGGCGCTTACTGGCACCTATGTTATAACCATCTCACTCCTC
 ACCAGTAGTAATTCAATCCCCCGCAATGACCGTGGATAACAAATTGGTAGAGTGAGGAG
 721 ArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPhe
 721 TTGGGGACTGGCGCACACGGCTTGCAGATCTGGCGTGGCTGTAGAGGCCAGTCGTCT
 AAGCCCTGACCCCGCGTGGCCGACGCTCTAGACCGGGCACCGACATCTCGGTAGCAGA
 781 SerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGlyAspIle
 781 TCTCCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATAACGCCCGCGTGGGTGACA
 AGAGGGTTTACCTCTGGTTGAGTAGTGCACCCCCCGCTATGGCGGCGACGCCACTGT
 841 IleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAsp
 841 TCATCAACGGCTTGCCTGTTCCGCCCGCAGGGGGCGGGAGATACTGCTGGGCCAGCCG
 AGTAGTTGCCGAACGAGGACAAAGGCGGGCGTCCCCGGCCCTCTATGACGAGCCGGTGGC
 901 GlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThr
 901 ATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCAGCAGA
 TACCTTACCAAGAGGTTCCCACCTCCAACGACCGCGGGTAGTGCCGATGCCGGTGTCT



FIG. 26B

ArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGlu
 961 CAAGGGGCCCTCCTAGGGTGCATAATCACCAAGCTAACTGGCCGGGACAAAAACCAAGTGG
 GTTCCCGGAGGATCCCACGTATTAGTGGTGGATTGACCGGCCCTGTTTTGGTTACCC
 GlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGly
 1021 AGGGTGAGGTCCAGATTGTGTCACTGCTGCCAAACCTTCTGGCAACGTGCATCAATG
 TCCCACCTCAGGCTAACACAGTTGACGACGGGTTGGAAAGGACCGTTGCACGTAGTTAC
 ValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyPro
 1081 GGGTGTGCTGGACTGTCTACACGGGGCCGGAACGAGGACCATCGCGTACCCAAAGGGTC
 CCCACACGACACTGACAGATGGTGGCCCGGCCCTGCTCTGGTAGCGCAGTGGGTTCCAG
 ValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGly
 1141 CTGTCACTCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAG
 GACAGTAGGTCTACATATGGTACATCTGGTCTGGAACACCCGACCGGGGAGGGCTTC
 SerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
 1201 GTAGCCGCTCATTGACACCCCTGCACCTTGCGGGCTCTCGGACCTTACCTGGTCACGAGGC
 CATCGGGCAGTAACTGTGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAAGTGTCCG
 AlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArg
 1261 ACGCCGATGTCATTCCGTGCGCCGGCGGGGTGATAGCAGGGCAGCCTGCTGTCGCCCC
 TGCCTACAGTAAGGGCACGCGGCCGCCCCACTATGTCCTGGTGGACGACAGCGGGG
 ProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAla
 1321 GGCCCATTCTACTTGAAAGCTCTCGGGGGTCCGCTGGTGTGCCCGCGGGCACG
 CCGGGTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCACAAACACGGGGCGCCCCGTGC
 ValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIle
 1381 CCGTGGGCATATTAGGGCCGCGGTGTCACCCGTGGAGTGGCTAAGGCGGTGGACTTA
 GGCACCCGTATAAAATCCCGGCCACACGTGGGCACCTCACCGATTCCGCCACCTGAAT
 ProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSerSerPro
 1441 TCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTCTCTC
 AGGGACACCTCTGGATCTGTGGTACTCCAGGGCACAAGTGCCTATTGAGGGAGAG
 ProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySerGlyLys
 1501 CACCAAGTAGTGCCTCAGAGCTTCCAGGTGGCTACCTCCATGCTCCACAGGCAGCGCA
 GTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTGCCGT
 SerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsnPro
 1561 AAAGCACCAAGGCTCCGGCTGCATATGCAGCTAGGGCTATAAGGTGCTAGTACTCAACC
 TTCTGTGGTCTCAGGGCCGACGTATACGTCAGTCCCAGTATTCCACGATCATGAGTTGG
 SerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAspPro
 1621 CCTCTGTGCTGCAACACTGGGCTTGGTGCATATGCTCAAGGTCTATGGGATCGATC
 GGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCCTAGCTAG
 AsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThrTyr
 1681 CTAACATCAGGACCAGGGTGAAGAACATTACACTGGCAGCCCCATCACGTACTCCACCT
 GATTGTAGTCCTGCCCACTTTGTTAATGGTGGACCGTCGGGGTAGTGCATGAGGTGGA
 GlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCysAsp
 1741 ACGGCAAGTTCTGGCCAGGGCGGGTGCCTGGGGGGCGCTTATGACATAATAATTG
 TGCCGTTCAAGGAACGGCTGCCACGAGCCCCCGGAATACTGTATTATAAACAC
 GluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGlnAla
 1801 ACGAGACTGCCACTCACGGATGCCACATCCATTTGGGCATGGCAGTGTCTGGACCAAG
 TGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAGCCGTGACAGGAACGGTTC
 GluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerValThr
 1861 CAGAGACTGCCGGGGCGAGACTGGTTGTGCTGCCACGGCCACCCCTCCGGGCTCGTCA
 GTCTCTGACCCCCCGCTCTGACCAACACGAGCGGTGGCGTGGGGAGGCCGAGGCAGT
 ValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPheTyr
 1921 CTGTGCCCATCCAAACATCGAGGAGGGTGTGCTCTGCCACCCGGAGAGATCCCTTTT
 GACACGGGGTAGGGTTGTAGCTCCAAACGAGACAGGTGGTGGCCTCTAGGGAAAAAA



FIG. 26C

GlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHisSer
 1981 ACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTGTCTT
 TGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCTCTGTAGAGTAGAACAGCTAA

 LysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAla
 2041 CAAAGAAGAAAGTGCAGCGAACCTCGCCGAAAGCTGGTCGCATTGGCATCAATGCCGTGG
 GTTTCTTCTTCACGCTGCTGAGCGCGTTCGACCAGCGTAACCGTAGTTACGGCAC

 TyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValValAla
 2101 CCTACTACCGCGGTCTGACGTGTCCTCATCCGACCAGCGCGATGTTGTCGTGCGGG
 GGATGATGGGCCAGAACCTGCACAGGCACTGGCTGGTCGCCGCTACACAGCAGCACC

 ThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThr
 2161 CAACCGATGCCCTCATGACCGGCTATACCGGCACTTCGACTCGGTGATAGACTGCAATA
 GTTGGCTACGGGAGTACTGGCGATATGGCGCTGAAGCTGAGCCACTATCTGACGTTAT

 CysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThr
 2221 CGTGTGTCACCCAGACAGTCGATTTCACTGGCTTACCCCTACCAATTGAGACAATCA
 GCACACAGTGGGTCTGTCAGCTAAAGTCGGAACCTGGGATGGAAGTGGTAACCTGTTAGT

 LeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysPro
 2281 CGCTCCCCCAGGATGCTGTCTCCCGCACTCAACGTCGGGCAAGGACTGGCAGGGGGAAAGC
 GCGAGGGGGTCTACGACAGAGGGCGTGAGTTGAGCCCCGTCCTGACCGTCCCCCTCG

 GlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSerVal
 2341 CAGGCATCTACAGATTTGTCGGCACCGGGGGAGCGCCCTCCGGCATGTTGACTCGTCCG
 GTCCGTAGATGCTAAACACCGTGGCCCCCTCGGGGGAGGCCGTACAAGCTGAGCAGGC

 LeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThrThr
 2401 TCCCTGTGAGTGCATGACGCAGGCTGTGCTTGGTATGAGCTACGCCCGAGACTA
 AGGAGACACTCACGATACTGCGTCCGACACGAAACATACTCGAGTGCAGGGCGCTGTGAT

 ValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeuGlu
 2461 CAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCGCTGAGGACCATCTTG
 GTCAATCCGATGCTCGATGTACTTGTGGGGCCCCGAAGGGCACACGGTCTGGTAGAAC

 PheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGlnThr
 2521 AATTTGGGAGGGCGTCTTACAGGCTCACTCATATAGATGCCACTTTCTATCCCAGA
 TTAAAACCTCCCGCAGAAATGTCCGGAGTGAGTATCTACGGGTGAAAGATAAGGGTCT

 LysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAlaArg
 2581 CAAAGCAGAGTGGGGAGAACCTCCTACCTGGTAGCGTACCAAGCCACCGTGTGCGCTA
 GTTCGTCTACCCCTCTGGAGGAATGGACCATCGCATGGTCGGTGGCACACGCGAT

 AlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLysPro
 2641 GGGCTCAAGCCCTCCCCATCGTGGGACCAAGATGTTGAGTGTGTTGATTGCCCTCAAGC
 CCCGAGTTGGGGAGGGGGTAGCACCTGGTCTACACCTTCACAAACTAACGGAGTTG

 ThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIleThr
 2701 CCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGTTCAGAATGAAATCA
 GGTGGGAGGTACCCGGTTGTGGGAGCATATGTCTGACCCCGGACAAGTCTTACTTTAGT

 LeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluValVal
 2761 CCCTGACGCACCCAGTCACCAATACATCATGACATGCATGTCGGCCGACCTGGAGGTC
 GGGACTGCGTGGGTCACTGGTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAGC

 ThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeuSer
 2821 TCACGAGCACCTGGGTGCTCGTGGCGCGCTGGCTGCTTGGCCGCGTATTGCGCTGT
 AGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACGGCGCATAACGGACA

 ThrGlyCysValValIleValGlyArgValLeuSerGlyLysProAlaIleIlePro
 2881 CAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTGTCGGGAAGGCCGCAATCATAC
 GTTGTCCGACGCACCGTACACCCGTCAGCAGAACAGGCCCTCGGCCGTTAGTATG



FIG. 26D

3001 TyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeu
 CGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTCAGTCAGAAGGCCCTCGGCCCTC
 GCATGTAGCTCGTCCCTACTACGAGCGGTCGTCAGTTCTCCGGGAGCCGGAGG
 GlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLys
 3061 TGCAAGACCGCGTCCCGTCAGGCAGAGGTTATGCCCTGCTGTCCAGACCAACTGGCAAA
 ACGTCTGGCGCAGGGCAGTCGTCCTCAATAGCGGGGACGACAGGTCTGGTTGACCGTT
 LeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAla
 3121 AACTCGAGACCTCTGGCGAAGCATAATGTGGAACCTTCATCAGTGGGATACAATACTTGG
 TTGAGCTCTGGAAGACCCGCTTCGTATACACCTGAAGTAGTCACCCATGTTATGAACC
 GlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAla
 3181 CGGGCTTGTCAACGCTGCCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTACAGCTG
 GCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAACCGAAAATGTCGAC
 ValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrpVal
 3241 CTGTCACCAGCCCCACTAACCAACTAGCCAAACCCCTCCTTCACATATTGGGGGGGGGG
 GACAGTGGTCGGGTGATTGGTGTAGCGGTTGGGAGGAGAAGTTGTATAACCCCCCCCACCC
 AlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAlaGly
 3301 TGGCTGCCAGCTGCCGCCGGTGCGCTACTGCCCTTGCTGGCGCTGGCTTAGCTG
 ACCGACGGGTCGAGCGGGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAAC
 AlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyrGly
 3361 GCGCCGCCATGGCAGTGGACTGGGGAAAGGTCTCATAGACATCCTGCAAGGTATG
 CGCAGCGGTAGCCGTACACCTGACCCCTCAGGAGTATCTGAGGAACGTCCAC
 AlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThr
 3421 GCGCGGGCGTGGCGGGAGCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCCTCA
 CGCAGCGGTAGCCGTACACCTGACCCCTCAGGAGTATCTGAGGAACGTCCAC
 GluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGlyVal
 3481 CGGAGGACCTGGTCAATCTACTGCCGCCATCCTCGCCGGAGCCCTCGTAGTCGGCG
 GCCTCCTGGACCACTGAGTACGGGGCGTAGGAGAGCGGGCCTCGGGAGCATGCCGC
 ValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrpMet
 3541 TGGTCTGTGCAAGCAATACTGCGCCGGACGTTGGCCGGAGGGGGAGTGCAGTGG
 ACCAGACACGTCGTTATGACGCCGGTGCACCGGGGGCGTCCCCCGTCACGTCACCT
 AsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrValPro
 3601 TGAAACCGGCTGATAGCCTCGCCTCCGGGGAAACCATGTTCCCCCACGCACTACGTGC
 ACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCAGTCAC
 GluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGlnLeu
 3661 CGGAGAGCGATGCACTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACCCAGC
 GCCTCTCGCTACGTCGACGGGCGCAGTGAACGGTATGAGTCGTCGGAGTGA
 LeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySerTrp
 3721 TCCTGAGGCAGTCACCAAGTGGATAAGCTGGAGTGTACCAACTCCATGCTCGGTTCT
 AGGACTCCCGTACGTTGACCTATTGAGCCTACATGGTGGAGGTACGAGGGCAAGGA
 LeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeuLys
 3781 GGCTAAGGGACATCTGGGACTGGATATGCGAGGTGGAGCAGCTTAAGACCTGGCTAA
 CCGATTCCCTGTAGACCCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGGACCGATT
 AlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyrLys
 3841 AAGCTAAGCTCATGCCACAGCTGCCCTGGATCCCTTGTGTCCTGCCAGCGCGGGTATA
 TTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGGACGGTGGCGCCCATAT
 GlyValTrpArgValAspGlyIleMetHisThrArgCysHisCysGlyAlaGluIleThr
 3901 AGGGGGCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATCA
 TCCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAGT



FIG. 26E

SerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAlaPro
 4021 66AGTGGGACCTTCCCCATTAAATGCCACACGGGCCCCCTGTACCCCCCTTCCTGCGC
 CCTCACCTGGAAAGGGTAATTACGGATGTGGTGCCTGGGACATGGGGGAAGGACGCG

 AsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGlnVal
 4081 CGAACTACAGTTCGCGCATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGGCAGG
 GCTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTATAACCTCTATTCCGTCC

 GlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGlnVal
 4141 TGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTGCCAGG
 ACCCCCCTGAAGGTATGCACTGCCACTGTGACTGTTAGAGTTACGGCACGGTCC

 ProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaProPro
 4201 TCCCCATCGCCCGAATTTCACAGAATTGGACGGGGTGCCTACATAGGTTTGCCTCCCC
 AGGGTAGCGGGCTTAAAGTGTCTAACCTGCCACGCGGATGTATCCAAACGCGGGGG

 CysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrProVal
 4261 CCTGCAAGCCCTTGCTGCGGGAGGGAGGTATCATTCAAGAGTAGGACTCCACGAATACCCGG
 GGACGTTCGGGAACGACGCCCTCCCATAGTAAGTCTCATCCTGAGGTGCTTATGGGCC

 GlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeuThr
 4321 TAGGGTCGCAATTACCTTGCGAGGCCGAACCGGACGTGGCGTGTGACGTCCATGCTCA
 ATCCCAGCGTTAACGCTCGGGCTTGGCCTGCACCCGGACAACACTGCAGGTACGAGT

 AspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerProPro
 4381 CTGATCCCTCCCATATAACAGCAGAGGCGGGCGAAGGTTGGCGAGGGGATCACCCC
 GACTAGGGAGGGTATATTGTCGCTCCGCCGGCGCTTCAACCGCTCCCTAGTGGGG

 SerValAlaSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThr
 4441 CCTCTGGCCAGCTCTCGGCTAGCCAGTATCGCTCCATCTCTCAAGGCAACTGCA
 GGAGACACCGGTCGAGGAGCCATCGGTCGATAGGCAGGGTAGAGAGTTCCGTTGAACGT

 AlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGlu
 4501 CCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCTATGGAGGCAGG
 GGCATTGGTACTGAGGGACTACGACTCGAGTATCTGGTTGGAGGATACCTCCGTCC

 MetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPhe
 4561 AGATGGCGGCAACATCACCAAGGGTTGAGTCAGAAACAAAGTGGTGAATTCTGGACTCCT
 TCTACCCGCCGTTGAGTCCTAACACTCAGTCTTTGTTTACCAAGACCTGAGGA

 AspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArg
 4621 TCGATCCGCTTGTGGCGAGGAGGACGAGCAGGGAGATCTCGTACCCGAGAAATCCTGC
 AGCTAGGCAGACACCGCCTCTCGTGCACCCCTAGAGGCATGGCGTCTTAGGACG

 LysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProPro
 4681 GGAAGTCTCGGAGATTGCCCAAGGCCCTGCCGTTGGCGGGGACTATAACCCCCC
 CCTCAGAGCCTCTAACGGGTCGGGACGGCAAACCGCGCCGGCTGATATTGGGGGG

 LeuValGluThrTrpLysProAspTyrGluProProValValHisGlyCysProLeu
 4741 CGCTAGTGGAGACGTTGAAAAAGCCGACTACGAAACACTGTGGTCCATGGCTGCGC
 GCGATCACCTCTGACACCTTTTGGGCTGATGCTTGGTGACACCAGGTACCGACAGCG

 ProProProLysSerProProValProProProArgLysLysArgThrValValLeuThr
 4801 TTCCACCTCAAAGTCCCCTCCTGTGCTCCGCTCGGAAGAAGCGGACGGTGGCTCTCA
 AAGGTGGAGGTTTCAGGGAGGACACGGAGGCGAGCCTTCGCGCTGCCACCAAGGAGT

 GluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSer
 4861 CTGAATCAACCTATCTACTGCCCTGGCGAGCTGCCACCCAGAAGCTTGGCAGCTCT
 GACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCGAGGA

 ThrSerGlyIleThrGlyAspAsnThrThrSerSerGluProAlaProSerGlyCys
 4921 CAACTCCGGCATTACGGGCACAATACGACAACATCCTCTGAGCCCCCCCCTCTGGCT
 GTTGAAGGGCGTAATGCCGCTGTTATGCTGTTAGGAGACTCGGGCGGGGAAGACCGA

 ProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGly
 4981 GCCCCCCGGACTCCGACGCTGAGTCCTATTCTCCATGCCCTGGAGGGGGAGCCTG
 CGGGGGGGCTGAGGCTGCACTCAGGATAAGGAGGTACGGGGGGACCTCCCCCTCGGAC



FIG. 26F

AspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAsp
 5041 GGGATCCGGATCTTAGCGACGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGGGAGG
 CCCTAGGCCTAGAACGCTGCCAGTACCACTGGCCAGTCATCACTCCGGTTGGCCTCC
 ValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAlaAla
 5101 ATGTCGTGTGCTGCTCAATGCTTACTCTTGGACAGGCGCACTCGTCACCCGTGGCCG
 TACAGCACACGAGTTACAGAACGAGTGGGAGCTGAGCAGTGGGACGGCAGCAGCAGG
 GluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsnLeu
 5161 CGGAAGAACAGAAACTGCCATCAATGCAACTAAGCAACTCGTGTACGTCACCACAAATT
 GCCTTCTTGTCTTGACGGTAGTTACGTGATTGAGCAACGATGCAAGTGGTGTAA
 ValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAspArg
 5221 TGGTGTATTCCACCACCTACGCACTGCTTGCCTAAAGGAGAAAGTCACATTGACA
 ACCACATAAGGTGGTGGAGTGCACGAGCTTCCGTCTTCAAGTGTAAACTGT
 LeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaAlaSer
 5281 GACTGCAAGTCTGGACAGCCATTACCAAGGACGTACTCAAGGAGGTTAAAGCAGCAGG
 CTGACGTTCAAGACCTGTCGGAATGGCCTGCATGAGTTCCCTCCAATTTCGCGCCGCA
 LysValLysAlaAsnLeu
 5341 CAAAAGTGAAGGCTAACTTG
 GTTTCACTCCGATTGAAC

FIG. 30

GlyGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCys
 1 GGGGGGGAGAACCTGCGGCTATCGCAGGTGCGCGCAAGCGGCGTACTGACAACACTAGCTGT
 CCCCCCCTCTTGACGCCATAGCGTCCACGGCGCGTTCGCCGCATGACTGTTGATCGACA
 GlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGln
 61 GGTAAACACCCTCACTTGTACATCAAGGCCGAGCAGCCTGTCGAGGCCGAGGGCTCCAG
 CCATTGTGGGAGTGAACATGAGTTCCGGCTCGCGACAGCTGGCGTCCCAGGTC
 -----Overlap with 19g-----
 AspCysThrMetLeuValCysGlyAspAspLeuValValIleCysGluSerAlaGlyVal
 121 GACTGCACCATGCTCGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTC
 CTGACGTGGTACGAGCACACACCCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAG
 GlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaPro
 181 CAGGAGGACGCCGAGCCTGAGAGCCTTACGGAGGCTATGACCAGGTAATCCGCC
 GTCCCTCTGCCGCTCGGACTCTCGGAAGTGCCTCGATACTGGTCATGAGGGGGGG
 ProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsn
 241 CCTGGGGACCCCCCACAACCAGAACGACTTGGAGCTCATACATCATGCTCCTCCAAC
 GGACCCCTGGGGGGTGTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTG
 ValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThr
 301 GTGTCAGTCGCCACGACGGCGCTGAAAGAGGGTCTACTACCTCACCGTGACCTACA
 CACAGTCAGCGGGTGCTGCCGACCTTCTCCAGATGATGGAGTGGCACTGGGATGT
 ThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeu
 361 ACCCCCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAGTCATTCTGGCTA
 TGGGGGGAGCGCTCTGACGCACCCCTGTCGTTGTGAGGTCAAGTAAAGGACCGAT
 GlyAsnIleIleMetPheAlaProThrLeuTrpAla
 421 GGCAACATAATCATGTTGCCACACTGTGGCG
 CGTTGATTAGTACAAACGGGGGTGTGACACCCCG



FIG. 27

IlePheLysIleArgMetTrpTyrValGlyGlyIleGluLysIleGluLysIleGluAlaAlaCysAsn
 1 CCATATTAAATCAGGATGTAACGTGGGAGGGGTCGAAACACAGGCTGGAAAGCTGCCCTGCG
 GGTATAAATTAGTCCTACATGCCACCCCTCCCCAGCTTGTGTCGGACCTTCGACGGACGT
 TrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeu
 61 ACTGGACGGGGCGAACGTTGCGATCTGGAAAGACAGGGACAGGTCCGAGCTCAGGCCGT
 TGACCTGGCCCCGGCTTGCACGGCTAGCCTTCCTGTCCTCTGGCTCGAGTCGGCA
 LeuLeuThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
 121 TACTGGTACACTACAGTGGCAGGTCCCTCAGGAGGGCACAAAGGAAGTGGATGGCA
 ATGACCGACTGGTGTGTTACCGTGTGTTACCGTGTGTTACCGTGTGTTACGGGA
 SerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGlnItyLeuItyRglYVal
 181 TGTCCACCGGGCCTCATCCACCTCCACAGAACATTTGTGACGTACTTGTACGGG
 ACAGGTGGGGAGTAGGTGGAGGTGAGGTGGTCTTGTAAACACTGCACTCATGAAACATGCC
 GlySerSerIleAlaSerTrpAlaIleLysTrpGluItyValValLeuPheLeuLeu
 241 TGGGGTCAGCATCCGGTCTGGCCATTAAAGTGGAGTAGTGGAGTCTCCCTGTTCTTC
 ACCCCAGTTCTGTAGGGCAGGACCCGGTAATTCAACCTCATGCAGCAAGGACAAGGAG
 LeuAlaAspAlaArgValCysSerCysLeuTrpMetLeuIleSerGlnAlaGlu
 301 TGCTTGCGAGACGGCGCCGCTGCTCCTGCTGGATGCTACTCATATCCCAAGCGG
 ACGAACGTTGCGCCGAGACGGAGGAGGAGGAAACACCTACTACGATGAGTATAGGGTTGCC
 ---Overlap with 14i---
 AlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeu
 361 AGGGGGCTTGGAGAACCTCGTAATACCTTAATGAGGATCCCTGGGGGAGCCACGGC
 TCCGGCAAACCTCTGGAGCATTATGAAATTACGTCGTTGGGGACCGGCTGGCAG
 Val
 421 TTGTATC
 AACATAG



FIG. 28

-----Overlap with 39c-----

1 LeuLysGluValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGlu
 TGCTCAAGGAGGTTAAAGCAGCGCGTCAAAGTGAAGGCTAACCTGCTATCCGTAGAGG
 ACGAGTCTCTCCAATTCGTCGCCAGTTTCACTTCCGATTGAACGATAGGCATCTCC

 61 AlaCysSerLeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAsp
 AAGCTTGAGCCTGACGCCCCACACTCAGCCAAATCCAAGTTGGTTATGGGGCAAAAG
 TTCGAACGTCGGACTGCGGGGTGTGAGTCGGTTAGGTTCAAACCAATACCCCGTTTC

 121 ValArgCysHisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuLeu
 ACGTCCGTTGCCATGCCAGAAAGGCCGTAAACCACATCAACTCCGTGTGGAAAGACCTTC
 TGCAGGCAACGGTACGGTCTTCCGCATTGGGTGTAGTTGAGGCACACCTTCTGGAAG

 181 GluAspAsnValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysVal
 TGGAAAGACAATGTAACACCAATAGACACTACCACATGGCTAACGAGGTTTCTGCG
 ACCTCTGTTACATTGGTTATCTGTGATGGTAGTACCGATTCTGCTCCAAAAGACGC

 241 GlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyVal
 TTCAGCCTGAGAAGGGGGTCGTAAGCCAGCTCGTCTCATCGTGTCCCCGATCTGGCG
 AAGTCGGACTCTTCCCCCAGCATTGGTCAGCAGAGTAGCACAGGGCTAGACCCGC

 301 ArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMet
 TGGCGCTGTCGAAAAGATGGTTTGTACGACGTGGTACAAAGCTCCCTGGCCGTGA
 ACGCGCACACGCTTTTACCGAAACATGCTGCACCAATGTTGAGGGGAACCGGCACT

 361 GlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAla
 TGGGAAGCTCCTACGGATTCCAATACTCACCAGGACAGCGGGTTGAATTCTCGTGCAAG
 ACCCTTCGAGGATGCCTAACGGTTATGAGTGGCTGTGCCAACCTAACGGAGCACGTT

 421 TrpLysSerLysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThr
 CGTGGAAAGTCCAAGAAAACCCAAATGGGGTCTCGTATGATACCCGCTGCTTGACTCCA
 GCACCTTCAGGTTCTTGGGGTACCCAAAGAGCATACTATGGCGACGAAACTGAGGT

 481 ValThrGluSerAspIleArgThrGluGluAla
 CAGTCACTGAGAGCGACATCCGTACGGAGGAGGCA
 GTCAGTGACTCTCGCTGTAGGCATGCCCTCCGT



FIG. 29

1 GluPheLeuValGlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAspThr
GAATTCTCGTGCAAGCGTGGAAAGTCCAAGAAAACCCAAATGGGTTCTCGTATGATACC
CTTAAGGAGCACGTTCGCACCTCAGGTTCTTGGGTTACCCCAAGAGCATACTATGC

-----Overlap with 35f-----

61 ArgCysPheAspSerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGln
CGCTGCTTGACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAATCTACCAA
GCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCTCCCTCGTTAGATGGTT

121 CysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeuTyr
TGTGTCACCTCGACCCCCAAGCCCGTGGCCATCAAGTCCCTCACCGAGAGGCTTAT
ACAAACACTGGAGCTGGGGTTCGGCGCACCGTAGTTCAGGGAGTGGCTCTCCGAAATA

181 ValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAla
GTTGGGGGCCCTCTTACCAATTCAAGGGGGAGAACTGCGGCTATCGCAGGTGCCGCG
CAACCCCCGGAGAAATGGTTAAGTTCCCCCTCTTGACGCCATAGCGTCACGGCGCG

241 SerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAla
AGCGGCGTACTGACAACTAGCTGTGGTAACACCCTCACTTGCTACATCAAGGCCGGCA
TCGCCGCGATGACTGTTGATCGACACCATTGTGGAGTGAACGATGTAGTCCGGCCG

301 AlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuVal
GCCTGTCAGCCGCAAGGCTCCAGGACTGCACCATGCTCGTGTGGCGACGACTTAGTC
CGGACAGCTGGCGTCCGAGGTCTGACGTGGTACGGACACACCCGCTGCTGAATCAG

361 ValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGCGAG
CAATAGACACTTTCGCGCCCCAGGTCTCCTGCGCCGCTC

FIG. 31



GlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAla
1 CGCGGCTGGAAAGAGGGTCTACTACCTACCTCACCCGTGACCCCTACAAACCCCCCTCGCGAGAGC
GCCGCACCTTTCTCCAGATGAGTGGACTGGGACTGGGATGTGGTGGGGAGGCTCTCG
-----Overlap with 26g-----
AlaTrpGluThrAlaArgHisthrProValAsnSerTrpLeuGlyAsnIleMetPhe
61 TGGCTGGAGACAGCAAGACACACTCCAGTCAATTCCACTGCTACTATGACTACTGGTAAAGGACCGATCCGTTAGTACAA
ACGCACCCCTCTGTCGTTCTGTGAGGTCAAGTAAAGGACCGATCCGTTAGTACAA

AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPheSerValLeuIleAla
121 TGGCCCCACACTGTGGGGAGGGATGATACTGATGACCCATTCTTAGCGGTCCCTATAGC
ACGGGGTGTGACACCCGCTACTATGACTACTGGTAAAGAAATCGCAGGAATATCG

ArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCystyrSerIleGlu
181 CAGGGACCAGCTTGAACAGGGCCCTCGATTCGGAGATCTACGGGGCTGCTACTCCATAGA
GTCCCTGGTCGAACACTGTCCGGAGCTAACGCTCTAGATGCCGGAGCATGAGGTATCT

ProLeuAspLeuProProIleIleGlnArgLeu
241 ACCACTTGATCTACCTCCAAATCATTCAAAGACTC
TGGTGAACTAGATGGAGGGTAGTAAGTTCTGAG



FIG. 32A

IlePheLysIleArgMetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsn
1 CCATATTTAAAATCAGGATGTACGTGGGAGGGGTCGAACACAGGCTGGAAGCTGCCTGCA
GGTATAAATTTAGTCCTACATGCACCCCTCCCCAGCTTGTGTCGACCTCGACGGACGT.

TrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeu
61 ACTGGACGCGGGGCGAACGCTTGCATCTGGAAAGACAGGGACAGGTCAGCTCAGCCCCGT
TGACCTGCGCCCGCTTCAACGCTAGACCTCTGCCCTGTCAGGCTCGAGTCGGGCA

LeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
121 TACTGCTGACCACTACACAGTGGCAGGTCCCTCCGTGTTCAACACCCTACCGCCT
ATGACGACTGGTGTGACCGTCCAGGAGGGCACAAAGGAAGTGTGGGAAGGTCGGA

SerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyVal
181 TGCCACCGGCCTCATCCACCTCCACCAGAACATTGTGGACGTGCAGTACTTGTACGGGG
ACAGGTGGCCGGAGTAGGTGGAGGTGGCTTGTAAACACCTGCACGTCAACATGCC

GlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeu
241 TGGGGTCAAGCATCGCTCCTGGGCCATTAAGTGGGAGTACGTCGTTCTCCTGTTCTTC
ACCCCACTTCGTAGCGCAGGACCCGGTAATTCAACCTCATGCAGCAAGAGGACAAGGAAG

LeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGlu
301 TGCTTGAGACGCGCGCGTCTGCTCCTGCTTGTGGATGATGCTACTCATATCCAAGCGG
ACGAACGTCTGCGCGCAGACGAGGACGAACACCTACTACGATGAGTATAGGGTCGCC

AlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeu
361 AGGCGGCTTGGAGAACCTCGTAATACTTAATGCAGCATCCCTGGCCGGACGCACGGTC
TCCGCCAACCTCTGGAGCATTATGAATTACGTCGTAGGGACCGGCCCTGCGTGCCAG

ValSerPheLeuValPhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGly
421 TTGTATCCTCTCGTGTCTTCTGCTTGCATGGTATTGAAGGGTAAGTGGGTGCCCG
AACATAGGAAGGAGCACAAGAACGAAACGTACCATAAACTCCATTACCCACGGGC

AlaValTyrThrPheTyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGln
481 GAGCGGTCTACACCTCTACGGGATGTGGCCTCTCCTCTGCTCCTGTTGGCGTTGCC
CTCGCCAGATGTGGAGATGCCCTACACCGGAGAGGAGGACGAGGACAACCGCAACGGGG

ArgAlaTyrAlaLeuAspThrGluValAlaAlaSerCysGlyGlyValValLeuValGly
541 AGCGGGCGTACGCGCTGGACACGGAGGTGGCGCGTGTGGCGTGTGTTCTCGT
TCGCCGCATGCGCGACCTGTGCCCTACACCGGAGAGGAGGACGAGGACAACCGCAACGGGG

LeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrp
601 GGTTGATGGCGCTGACTCTGTCACCATATTACAAGCGCTATATCAGCTGGTGTGTT
CCAACCTACCGCGACTGAGACAGTGGTATAATGTTCGCATATAGTCGACCACGAACACCA

LeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsn
661 GGCTTCAGTATTTCTGACCAGAGTGGAAAGCGCAACTGCACGTGTGGATTCCCCCCC
CCGAAGTCATAAAAGACTGGTCTACCTTCGCGTTGACGTGCACACCTAACGGGGAGT

ValArgGlyGlyArgAspAlaValIleLeuLeuMetCysAlaValHisProThrLeuVal
721 ACGTCCGAGGGGGGCGCGACGCCGTCTTACTCATGTGTGCTGTACACCCGACTCTGG
TGCAGGCTCCCCCGCGCTGCGGAGTAGAATGAGTACACAGACATGTGGGCTGAGACC

PheAspIleThrLysLeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSer
781 TATTGACATACCAAATTGCTGCTGGCGCTTCCGGACCCCTTGGATTCTCAAGCCA
ATAAAACTGTAGTGGTTAACGACGACCGGAGAACCTAACAGAGTTTCGG

LeuLeuLysValProTyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAla
841 GTTGCTTAAAGTACCCCTACTTGTGCGCGTCAAGGCCCTCTCCGGTCTGCGCGTTAG
CAAACGAATTTCATGGGATGAAACACGCGCAGGTTCCGGAGAGGCCAACGACGCGCAATC



FIG. 32B

ArgLysMetIleGlyGlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThr
 901 CGCGGAAGATGATCGGAGGCCATTACGTCAAATGGTCATCATTAAAGTTAGGGCGCTTA
 GCGCCTTCTACTAGCCTCCGGTAATGCACGTTACCAAGTAGTAATTCAATCCCCGCGAAT

 GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg
 961 CTGGCACCTATGTTATAACCATCTCACTCCTCTCGGGACTGGGCGCACACGGCTTGC
 GACCGTGGATACAAATATTGGTAGAGTGAGGAGAAGCCCTGACCCCGTGTGCGAACG

 AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
 1021 GAGATCTGGCCGTGGCTGTAGAGCCAGTCGCTTCTCCCAAATGGAGACCAAGCTCATCA
 CTCTAGACCGGCACCGACATCTCGGTAGCAGAAGAGGGTTACCTCTGGTTGAGTAGT

 TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
 1081 CGTGGGGGGCAGATACCGCCGCGTGCCTGACATCATCAACGGCTTGCCTGTTCCGCC
 GCACCCCCCGTCTATGGCGCGCACGCCACTGTAGTAGTTGCCAACGGACAAAGGCGGG

 ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
 1141 GCAGGGGGCCGGAGATACTGCTCGGGCAGCCGATGGAATGGCTCCAAGGGGTGGAGGT
 CGTCCCCGGCCCTATGACGAGCCCGTGGCTACCTTACCAAGAGGTTCCCCACCTCCA

 LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
 1201 TGCTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGGCCTCTAGGGTGCATAATCA
 ACGACCGCGGGTAGTGCCGCATGCCGTGCTGTTCCCCGGAGGATCCCACGTATTAGT

 SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
 1261 CCAGCTTAACCTGGCCGGACAAAAACCAAGTGGAGGGTCAGATTGTGTCAACTG
 GGTCGGATTGACCGGCCCTGTTGGTACCTCCACTCCAGGTCTAACACAGTTGAC

 AlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAla
 1321 CTGCCAACCTCTGGCAACGTGCATCAATGGGGTGTGCTGGACTGTCTACCACGGGG
 GACGGGTTTGAAGGACCGTTGACGTAGTTACCCACACGACCTGACAGATGGTCCCC

 GlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyrThrAsnValAsp
 1381 CCGGAACGAGGACCATCGCGTACCCAAAGGGTCTGTATCCAGATGTATAACCAATGTAG
 GGCCTTGCTCTGGTAGCGCAGTGGGTTCCAGGACAGTAGGTCTACATATGGTACATC

 GlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThrProCyrThrCys
 1441 ACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAGGTAGCCGCTATTGACACCCCTGCAC
 TTGGTTCTGAAACACCGACCGGGCGAGGCGTTCCATGGCGAGTAACTGTGGACGTGAA

 GlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIleProValArgArgArg
 1501 GCGGCTCCTCGGACCTTACCTGGTCACGAGGCACGCCGATGTCATTCCCGTGCGCCGG
 CGCCGAGGAGCCTGGAAATGGACAGTGCTCCGTGCAGCTACAGTAAGGGCACGCCGG

 GlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSer
 1561 GGGGTGATAGCAGGGGCAGCCTGCTGTCGCCCGGCCATTCTACTTGAAAGGCTCCT
 CCCCACTATCGTCCCCGTCGGACAGCTGGCCGGTAAAGGATGAACCTTCCGAGGA

 GlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCys
 1621 CGGGGGGTCCGCTGTTGTGCCCGCGGGGACGCCGTGGCATATTAGGGCCGCGGT
 GCCCCCCAGGGCACAACACGGGGCGCCCCGTGCGGCACCGTATAAAATCCCCGCCACA

 ThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeuGluThrThrMet
 1681 GCACCCGTGGAGTGGCTAAGGCAGGTGGACTTTATCCCTGTGGAGAACCTAGAGACAA
 CGTGGGCACCTCACCGATTCCGCCACCTGAAATAGGGACACCTCTGGATCTCTGGTGGT



FIG. 32C

ArgSerProValPheThrAspAsnSerSerProProValValProGlnSerPheGlnVal
 1741 TGAGGTCCCCGGTGTTCACGGATAACTCCTCTCCACCAGTAGTGGCCCAGAGCTTCCAGG
 ACTCCAGGGGCCACAAGTGCCTATTGAGGAGAGGTGGTCATCACGGGGTCTCGAAGGTCC

 AlaHisLeuHisAlaProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAla
 1801 TGGCTCACCTCCATGCTCCCACAGGCAGCGGCAAAAGCACCAAGGTCCCAGGCTGCATATG
 ACCGAGTGGAGGTACGAGGGTGTCCGTCGCCGTTCTGGTTCCAGGGCCGACGTATAC

 AlaGlnGlyTyrLysValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGly
 1861 CAGCTCAGGGCTATAAGGTGCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTG
 GTCGAGTCCCAGATTCCACGATCATGAGTTGGGGAGACAACGACGCTGTGACCCGAAAC

 AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
 1921 GTGCTTACATGTCAAGGCTCATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAA
 CACGAATGTACAGGTTCCGAGTACCCTAGCTAGTAGGATTGAGTCCTGGCCCCACTCTGTT

 ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
 1981 TTACCACTGGCAGCCCCATCACGTTACTCCACCTACGGCAAGTTCTTGCACGGCGGGT
 AATGGTGACCGTCGGGGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCCC

 SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
 2041 GCTCGGGGGCGCTTATGACATAATAATTGTGACGAGTGCACCTCACGGATGCCACAT
 CGAGCCCCCGCGAATACTGTATTATAACACTGCTCACGGTGAGGTGCCTACGGTGT

 IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
 2101 CCATCTTGGGCATCGGCACTGCTTGTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTG
 GGTAGAACCGTAGCCGTGACAGGAACTGGTCTGTGACGCCCGCTGTGACCAAC

 LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
 2161 TGCTGCCACCGCACCCTCCGGGCTCCGTACTGTGCCCCATCCAAACATCGAGGAGG
 ACGAGCGGTGGCGTGGGAGGCCGAGGCACTGACACGGGTAGGGTTGAGCTCCCT

 AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
 2221 TTGCTCTGCCACCCGGAGAGATCCCTTTACGGCAAGGCTATCCCCCTCGAAGTAA
 AACGAGACAGGTGGTGGCCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATT

 LysGlyGlyArgHisLeuIlePheCysHisSerLysLysCysAspGluLeuAlaAla
 2281 TCAAGGGGGGAGACATCTCATCTTGTGATTCAAAGAAGTGCACGAACTCGCCG
 AGTTCCTCGTGTAGAGTAAAGACAGTAAGTTCTCACGCTGCTTGAGCGGC

 LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
 2341 CAAAGCTGGTCGATTGGGCATCAATGCCGTGGCTACTACCGCGGTCTGACGTGTCCG
 GTTTCGACCAAGCTAACCGTAGTTACGGCACCGGATGATGGGCCAGAACTGCACAGGC

 IleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThrGlyTyrThr
 2401 TCATCCCACCGCGGCGATGTTGTCGTGCAACCGATGCCCTCATGACCGGCTATA
 AGTAGGGCTGGTCGCCGCTAACACAGCAGCACCGTTGCTACGGGAGTACTGGCGATAT

 GlyAspPheAspSerValIleAspCysAsnThrCysValThrGlnThrValAspPheSer
 2461 CCGGCACCTCGACTGGTGTAGACTGCAATACGTTGTCACCCAGACAGTCGATTTCA
 GGCGCGTGAAGCTGAGCCACTATCTGACGTTATGACACAGTGGGCTGTGAGCTAAAGT

 LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
 2521 GCCTTGACCCCTACCTTCACCAATTGAGACAATCACGCTCCCCCAGGATGCTCTCCCGCA
 CGGAACCTGGGATGGAAGTGGTAACCTGTTAGTGCAGGGGGTCTACGACAGAGGGCGT

 GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
 2581 CTCAACGTCGGGGCAGGACTGGCAGGGAAAGCCAGGCATCTACAGATTGTGGCACCGG
 GAGTTGCAGCCCCGTCCTGACCGTCCCCCTCGGTCCTAGATGCTAAACACCGTGGCC

 GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
 2641 GGGAGCGCCCCCTCCGGCATGTTGACTCGTCCGTCTGTGAGTGTATGACGCAGGCT
 CCCTCGGGGGAGGGCGTACAAGCTGAGCAGGAGACACTCACGATACTGCGTCCGA

 AlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThr
 2701 GTGCTTGGTATGAGCTCACGCCCCGAGACTACAGTTAGGCTACGAGCGTACATGAACA
 CACGAACCATACTCGAGTGCAGGCGGCTCTGATGTCATCCGATGCTCGATGTAATTGT



FIG. 32D

ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
 2761 CCCCCGGGGCTTCCCGTGTGCCAGGACCATTTGAATTTGGGAGGGCGTCTTACAGGCC
 GGGGCCCCGAGGGCACACGGTCTGGTAGAACTTAAACCCCTCCCGCAGAAATGTCCGG

 ThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyr
 2821 TCACTCATATAGATGCCCACTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTTCCTT
 AGTGAGTATATCTACGGGTAAAGATAGGGTCTTCTCGTCTCACCCCTTGAAGGAA

 LeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAsp
 2881 ACCTGGTAGCGTACCAAGCCACCGTGTGCCCTAGGGCTCAAGCCCCCTCCCCATCGTGGG
 TGGACCATCGCATGGTTCGGTGGCACACCGATCCGAGTTCGGGAGGGGGTAGCACCC

 GlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeu
 2941 ACCAGATGTGGAAGTGTGATTGCTCGCCTCAAGCCCACCCCTCATGGGCCAACACCCCTGC
 TGGTCTACACCTTCACAAACTAACGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGAGC

 TyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIle
 3001 TATACAGACTGGCGCTTCAAGAATGAAATCACCTGACGCACCCAGTCACCAAATACA
 ATATGTCGACCCGCAACAAGTCTTACTTTAGTGGGACTGCGTGGGTCACTGGTTATGT

 MetThrCysMetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGly
 3061 TCATGACATGCATGTCGGCCGACCTGGAGGTCGTACAGCAGCACCCTGGGTGCTCGTGGCG
 AGTACTGTACGTACAGCCGGCTGGACCTCAGCAGTGTGTCGTGGACCCACGAGCAACC

 ValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArg
 3121 GCGTCTGGCTGCTTGGCCCGTATTGCTGTCAACAGGCTGCGTGGTCAATAGTGGGCA
 CGCAGGACCGACGAAACCGGGCGATAACGGACAGTTGTCGACGCACCAAGTATCACCG

 ValValLeuSerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPhe
 3181 GGGTCGTCTTGTCCGGGAAGCCGGCAATCATACCTGACAGGGAAAGTCCTCACCGAG
 CCCAGCAGAACAGGCCCTCGGCCGTTAGTATGGACTGTCCTCAGGAGATGGCTCTCA

 AspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAla
 3241 TCGATGAGATGGAAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTC
 AGCTACTCTACCTCTCACGAGAGTCGTGAATGGCATGTAGTCGTTCCCTACTACGAGC

 GluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluVal
 3301 CCGAGCAGTTCAAGCAGAAGGCCCTCGGCCCTCCTGCAAGACCGCGTCCCGTCAGGCAG
 GGCTCGTCAAGTCGTCTTCCGGAGCCGGACGCTGGCGCAGGGCAGTCCGTCTCC

 IleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMet
 3361 TTATCGCCCCCTGCTGTCCAGACCAACTGGCAAAACTCGAGACCTCTGGCGAAGCATA
 AATAGCGGGGACGACAGGTCTGGTTGACCGTTTTGAGCTCTGGAGACCCGCTTCGTAT

 TrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnPro
 3421 TGTGGAACTTCATCAGTGGGATAACAATACTTGGGGCTGTCAACGCTGCCTGGTAACC
 ACACCTTGAAGTAGTCACCCATGTTATGAAACCGCCCCAACAGTTGCGACGGACCATTGG

 AlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
 3481 CCGCCATTGCTTATTGATGGCTTACAGCTGCTGTCAACCAGCCACTAACCACTAGCC
 GGCGGTAAACGAAAGTAACCTACCGAAAATGTCGACGACAGTGGTGGGTATTGGTGATCG

 ThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAla
 3541 AAACCTCCTCTCAACATATTGGGGGGTGGGTGGCTGCCAGCTGCCGCCGGTG
 TTTGGGAGGAGAAGTTGTATAACCCCCCACCACCGACGGGTCGAGCGGGCCAC

 AlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGly
 3601 CCGCTACTGCCCTTGTGGCGCTGGCTTAGCTGGCGCCATGGCAGTGTGGACTGG
 GGCATGACGGAAACACCCGCGACCGAATCGACCGCGGGTAGCCGTACAACCTGACC

 LysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAla
 3661 GGAAGGTCTCATAGACATCCTGCAAGGGTATGGCGGGCGTGGCGGGAGCTTGTGG
 CCTTCCAGGAGTATCTGTAGGAACGTCCTACCGCGCCGACCGCCCTCGAGAACACC

 PheLysIleMetSerGlyGluValProSerThrGluAspLeuValAsnLeuLeuProAla
 3721 CATTCAAGATCATGAGCGGTGAGGTCCCCCTCCACGGAGGACCTGGTCAATCTACTGCC
 GTAAGTTCTAGTACTCGCCACTCCAGGGGAGGTGCCTCTGGACCAAGTTAGATGACGGGC



FIG. 32E

3781 IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
 CCATCCTCTGCCCGGAGCCCTGAGTCGGCGTGGTCTGCAAGCAATACTGCGCCGG
 GGTAGGAGAGCGGGCCTCGGGAGCATCAGCCGACACAGACACGTCGTTATGACGCGGCC

 ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
 3841 ACGTTGGCCCCGGCGAGGGGGCAGTGCAGTGGATGAAACGGCTGATAGCCTTCGCCCTCCC
 TGCAACCGGGGGCGCTCCCCGTCACGTCACCTACTTGGCGACTATCGGAAGCGGAGGG

 GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
 3901 GGGGGAAACCATGTTCCCCACGCACTACGTGCCGAGAGCGATGCAAGCTGCCCGTCA
 CCCCCCTGGTACAAAGGGGGTGGCTGATGCCACGGCCTCGCTACGTCGACGGCGCAGT

 AlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
 3961 CTGCCATACTCAGCAGCCTACTGTAACCCAGCTCTGAGGCAGTCACCAAGTGGATAA
 GACGGTATGAGTCGTCGGAGTGCACATTGGTCGAGGACTCGCTGACGTGGTACCTT

 SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
 4021 GCTCGGAGTGTACCACTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGACTGGATAT
 CGAGCCTCACATGGTGGAGGTACGAGGCCAAGGACCGATTCCCTGAGACCCCTGACCTATA

 GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
 4081 GCGAGGTGAGCGACTTTAAGACCTGGCTAAAGCTAAGCTATGCCACAGCTGCC
 CGCTCCACAACACTCGCTGAAATTCTGGACCGATTTCGATTGAGTACGGTGTGACGGAC

 IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
 4141 GGATCCCCTTGTGTCCTGCCAGCGCGGGTATAAGGGGGTCTGGAGTGGACGGCATCA
 CCTAGGGGAAACACAGGACGGTCGCGCCATATTCCCCAGACCGCTCACCTGCCGTAGT

 HisThrArgCysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArg
 4201 TGACACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAACGGGACGATGA
 ACGTGTGAGCGACGGTACACCTCGACTCTAGTGACCTGACAGTTTGGCCCTGCTACT

 IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
 4261 GGATCGTCGGCTCTAGGACTCTGAGGACATGTGGAGTGGGACCTTCCCTTAATGCCT
 CCTAGCAGCCAGGATCTGGACGTCCTTGTACACCTCACCCCTGAAAGGGGTAATTACGGG

 ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
 4321 ACACCAACGGGCCCCCTGTACCCCCCTCTGCGCCGAACATCACGTTGCGCTATGGAGGG
 TGTGGTCCCCGGGGACATGGGGGAAGGACGCGGCTTGATGTGCAAGCGCGATACCTCCC

 SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
 4381 TGTCTGAGAGGAATATGGAGATAAGGAGGTGGGGACTTCAACTACGTGACGGGTA
 ACAGACGTCTCCTTACACCTCTATTCGTCACCCCTGAAGGTATGCACTGCCAT

 ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGluLeu
 4441 TGACTACTGACAATCTCAAATGCCGTGCCAGGCCATGCCCGAATTTTACAGAAAT
 ACTGATGACTGTTAGAGTTACGGGACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTA

 AspGlyValArgLeuHisArgPheAlaProProCysLysProLeuLeuArgGluGluVal
 4501 TGGACGGGGTGCCTACATAGGTTGCCGCCCCCTGCAAGCCCTGCTGCGGGAGGAGG
 ACCTGCCACCGGGATGATCCAAACGCCGGGACGTCGGGACGACGCCCTCC

 SerPheArgValGlyLeuHisGluTyrProValGlySerGlnLeuProCysGluProGlu
 4561 TATCATTAGAGTAGGACTCCACGAATACCCGGTAGGGTCGCAATTACCTGCGAGCCCG
 ATAGTAAGTCTCATCCTGAGGTGTTATGGCCATCCCGCTTAATGGAACGCGTCC

 ProAspValAlaValLeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAla
 4621 AACCGGACGTGCCGTGTTACGTCATGCTCACTGATCCCTCCATATAACAGCAGAGG
 TTGGCCTGCACCGGACAACCTGAGGTACGAGTGAATGGGAGGGTATATTGTCGTC

 AlaGlyArgArgLeuAlaArgGlySerProProSerValAlaSerSerAlaSerGln
 4681 CGGCCGGCGAAGGTTGGCGAGGGGATCACCCCTCTGTGGCCAGCTCCTCGCTAGCC
 GCCGGCCGCTTCAACCGCTCCCTAGTGGGGGGAGACACCGGTGAGGAGCCGATCGG

 LeuSerAlaProSerLeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGlu
 4741 AGCTATCCGCTCCATCTCTCAAGGCAACTTGCACCGCTAACCATGACTCCCTGATGCT
 TCGATAGGCGAGGTAGAGAGTTCCGTTAACGTGGCATTGGTACTGAGGGGACTACGAC



FIG. 32F

LeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlyAsnIleThrArgValGlu
 4801 AGCTCATAGAGGCCAACCTCCATGGAGGCAGGAGATGGGCAGCAACATCACCAAGGGTTG
 TCGAGTATCTCCGGTTGGAGGATACCTCCGTCTACCCGCCGTTGAGTGGTCCCAAC

 SerGluAsnLysValValIleLeuAspSerPheAspProLeuValAlaGluGluAspGlu
 4861 AGTCAGAAAACAAGTGGTATTCTGGACTCCTCGATCCGCTTGTGGCGGAGGAGCAG
 TCAGTCTTGTGTTACCACTAACGACCTGAGGAAGCTAGGCCAACACCCGCTCCTGC

 ArgGluIleSerValProAlaGluIleLeuArgLysSerArgArgPheAlaGlnAlaLeu
 4921 AGCGGGAGATCTCCGTACCCGAGAAATCCTGCGGAAGTCTCGGAGATTGCCAGGCC
 TCGCCCTCTAGAGGCATGGGCGTCTTAGGACGCCCTAGAGCCTAAGCGGGTCCGGG

 ProValTrpAlaArgProAspTyrAsnProProLeuValGluThrTrpLysLysProAsp
 4981 TGCCCGTTGGCGCGCCGGACTATAACCCCCCGCTAGTGGAGACGTTGGAAAAGCCCG
 ACGGGAAACCCCGCGCCGGCCTGATATTGGGGGGCGATCACCTCTGCACCTTTTCGGGC

 TyrGluProProValValHisGlyCysProLeuProProLysSerProProValPro
 5041 ACTACGAACCACCTGTGGTCCATGGCTGTCGCTTCCACCTCAAAGTCCCCTCTGTGC
 TGATGCTTGGTGGACACCAGGTACCGACAGGCGAAGGGTGGAGGTTCAAGGGGAGGACAG

 ProProArgLysLysArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAla
 5101 CTCCGCCCTCGGAAGAAGCGGACGGTGGTCTCACTGAATCAACCCCTATCTACTGCCCTGG
 GAGGGCGGAGCCTCTCGCCCTGACCAGGAGTGAATTAGTTGGGATAGATGACGGAAACC

 GluLeuAlaThrArgSerPheGlySerSerSerThrGlyIleThrGlyAspAsnThr
 5161 CCGAGCTGCCACCAAGAAGCTTGGCAGCTCCTCAACTTCCGGATTACGGGGGACAATA
 GGCTCGAGCGGTGGTCTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTAT

 ThrThrSerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerTyr
 5221 CGACAAACATCCTCTGAGCCGCCCTTCTGGCTGCCCTGGACTCCGACGCTGAGTCCT
 GCTGTTGAGGAGACTCGGGGGGGAAAGACCGACGGGGGGCTGAGGCTGCGACTCAGGA

 SerSerMetProProLeuGluGluGluProGlyAspProAspLeuSerAspGlySerTrp
 5281 ATTCCCATGCCCTGGAGGGGAGGCTGGGGATCCGGATCTTAGCGACGGGTCAATGCTTACT
 TAAGGAGGTACGGGGGGACCTCCCCCTGGACCCCTAGGCCCTAGAATCGCTGCCAGTA

 SerThrValSerSerGluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSer
 5341 GGTCAACGGTCAGTAGTGAGGCCAACCGCGAGGATGTCGTGTCGCTCAATGCTTACT
 CCAGTTGCCAGTCATCACTCCGGTTCGCGCTCCTACAGCACACGACGAGTTACAGAATGA

 TrpThrGlyAlaLeuValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAla
 5401 CTTGGACAGGCGCACTCGTACCCCGTGCCTGGCGGAAAGAACAGAAACTGCCCATCAATG
 GAACCTGTCCCGTGTGAGCAGTGGGACCGGGCCTTGTCTTGTCTTGTCTTGTCTTGTCTTGT

 LeuSerAsnSerLeuLeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAla
 5461 CACTAAGCACTCGTTGCTACGTACCAATTGGGTGATTCCACCACTACGCACTG
 GTGATTGTTGAGCAACGATGCACTGGTTAAACCACATAAGGGTGGAGTGGCTCAC

 CysGlnArgGlnLysLysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGln
 5521 CTTGCCAAAGGCAGAAGAAAGTCACATTGACAGACTGCAAGTTCTGGACAGCATTACC
 GAACGGTTCCGTTCTCTTCACTGTGTTCAAGACCTGTCGTTAATGG

 AspValLeuLysGluValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerVal
 5581 AGGACGTAACCAAGGGTTAAAGCAGCGCGTAAAGCTGAAAGGCTAACTTGTATCCG
 TCCTGCATGAGTCCCTCAATTCTCGTCGCCAGTTTCACTCCGATTGAACGATAGGC

 GluGluAlaCysSerLeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAla
 5641 TAGAGGAAGCTTGAGCCTGACGCCACACTCAGCCAAATCCAAGTTGGTTATGGGG
 ATCTCCCTCGAACGTCGGACTGCGGGGGTGTGAGTCGGTTAGGTTCAAACCAATACCC

 LysAspValArgCysHisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAsp
 5701 CAAAGACGTCGTTGCCATGCCAGAAAGGCCGTAACCCACATCAACTCCGTGTGGAAAG
 GTTTCTGCAGGCAACGGTACGGTCTTCCGGATTGGGTGTAGTTGAGGCAACCTTTC

 LeuLeuGluAspAsnValThrProIleAspThrThrIleMetAlaLysAsnGluValPhe
 5761 ACCTTCTGGAAAGACAATGTAACACCAATAGACACTACCATCATGGCTAAGAACGAGGTT
 TGGAAGACCTCTGTTACATTGTGGTTATCTGTGATGGTAGTACCGATTCTGCTCCAAAC



FIG. 32G

CysValGlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeu
 5821 TCTGCGTTAGCCTGAGAAGGGGGTCGTAAGCCAGCTCGTCTCATCGTGTCCCCGATC
 AGACGCAAGTCGGACTCTCCCCCAGCATTGGTCAGCAGAGTAGCACAAGGGGCTAG

 GlyValArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAla
 5881 TGGGCGTGCCTGTCGAAAGATGGCTTTGTACGACGTGGTTACAAAGCTCCCTGG
 ACCCGCACGCGCACACGCTTTCTACCGAAACATGCTGCACCAATGTTGAGGGGAACC

 ValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuVal
 5941 CCGTGATGGAAAGCTCCTACGGATTCCAATACTCACCAAGGGACAGCGGGTTGAATTCTCG
 GGCACATACCTTCGAGGATGCCTAAGGTTATGAGTGGTCTGTCGCCAACTTAAGGAGC

 GlnAlaTrpLysSerLysThrProMetGlyPheSerTyrAspThrArgCysPheAsp
 6001 TGCAAGCGTGGAAAGTCCAAGAAAACCCAATGGGTTCTCGTATGATAACCGCTGCTTTG
 ACGTTCGCACCTTCAGGTTCTTGGGTTACCCAAAGAGCATACTATGGCGACGAAAC

 SerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeu
 6061 ACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAATCTACCAATGTTGTGACC
 TGAGGTGTCAGTGAECTCGCTGTAGGCATGCCTCCTCGTTAGATGGTTACAACACTGG

 AspProGlnAlaArgValAlaIleLysSerLueThrGluArgLeuTyrValGlyGlyPro
 6121 TCGACCCCCAAGCCCGCGTGGCCATCAAGTCCCTACCGAGAGGCTTTATGTTGGGGGCC
 AGCTGGGGGGTCCGGGGCACCGGTAGTTAGGGAGTGGCTCTCCGAAATAACAACCCCCGG

 LeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeu
 6181 CTCTTACCAATTCAAGGGGGGAGAACTGCAGGCTATCGCAGGTGGCGAGCAGCGCGTAC
 GAGAATGGTTAAGTCCCCCTTGTACGCCGATAGCGTCCACGGCGCTCGCCGATG

 ThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAla
 6241 TGACAACTAGCTGGTAACACCTCACTTGCTACATCAAGGCCGGCAGCCTGTCGAG
 ACTGTTGATCGACACCATTGTGGGAGTGAACGATGTAGTCCGGGCCGTCGGACAGCTC

 AlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuValValIleCysGlu
 6301 CCGCAGGGCTCCAGGACTGCACCATGCTGTGTGGCGACGACTTAGTCGTTATCTGTG
 GGCCTCCGAGGTCTGACGTGGTAGCAGCACACCCGCTGCTGAATCAGCAATAGACAC

 SerAlaGlyValGlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArg
 6361 AAAGCGCGGGGTCCAGGAGGACGCGGGCAGCCTGAGAGCCTCACGGAGGCTATGACCA
 TTTCGCGCCCCCAGGTCTCCTCGCCGCTCGGACTCTCGGAAGTGCCTCGGATACTGGT

 TyrSerAlaProProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSer
 6421 GGTACTCCGCCCCCTGGGGACCCCCACAACCAAGAACGACTTGGAGCTCATAACAT
 CCATGAGGCGGGGGACCCCTGGGGGTGTTGGCTTATGCTGAACCTCGAGTATTGTA

 CysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThr
 6481 CATGCTCCTCCACGTTGTCAGTCGCCCACGACGGCGCTGGAAAGAGGGTCTACTACCTCA
 GTACGAGGAGGTTGACAGTCAGCGGGTCTGCCGACCTTCTCCAGATGATGGAGT

 ArgAspProThrThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProVal
 6541 CCCGTGACCCCTACAACCCCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAG
 GGGCACTGGGATGTTGGGGGGAGCGCTCTCGACGCACCCCTGTCGTTCTGTGAGGTC

 AsnSerTrpLeuGlyAsnIleIleMetPheAlaProThrLeuTrpAlaArgMetIleLeu
 6601 TCAATTCTGGCTAGGCAACATAATCATGTTGCCCCACACTGTGGCGAGGATGATAC
 AGTTAAGGACCGATCCGTTGTATTAGTACAAACGGGGTGTGACACCCGCTCTACTATG

 MetThrHisPhePheSerValLeuIleAlaArgAspGlnLeuGluGlnAlaLeuAspCys
 6661 TGATGACCCATTCTTACGGCTCTTATAGCCAGGGACCAAGCTGAAACAGGCCCTCGATT
 ACTACTGGTAAAGAAATCGCAGGAATATGGTCCCTGGTCGAACCTGGTCCGGAGCTAA

 GluIleTyrGlyAlaCysTyrSerIleGluProLeuAspLeuProProIleIleGlnArg
 6721 GCGAGATCTACGGGGCTGCTACTCCATAGAACCAACTGATCTACCTCAATCATTCAA
 CGCTCTAGATGCCCGGACGATGAGGTATCTGGTGAACTAGATGGAGGTTAGTAAGTTT

 Leu
 6781 GACTC
 CTGAG



FIG. 33

Lane Number	Chimp Reference Number	Infection Type	Sample date (days) (0=inoculation day)	ALT (alanine aminotransferase level in sera) μu/ml)
1	1	NANB	0	0
2	1	NANB	76	71
3	1	NANB	118	19
4	1	NANB	154	N/A
5	2	NANB	0	0
6	2	NANB	21	52
7	2	NANB	73	13
8	2	NANB	138	N/A
9	3	NANB	0	8
10	3	NANB	43	205
11	3	NANB	53	14
12	3	NANB	159	6
13	4	NANB	-3	11
14	4	NANB	55	132
15	4	NANB	83	N/A
16	4	NANB	140	N/A
17	5	HAV	0	4
18	5	HAV	25	147
19	5	HAV	40	18
20	5	HAV	268	5
21	6	HAV	-8	N/A
22	6	HAV	15	100
23	6	HAV	41	10
24	6	HAV	129	N/A
26	7	HAV	0	7
27	7	HAV	22	83
28	7	HAV	115	5
29	7	HAV	139	N/A
30	8	HAV	0	15
31	8	HAV	26	130
32	8	HAV	74	8
33	8	HAV	205	5
34	9	HBV	-290	N/A
35	9	HBV	379	9
36	9	HBV	435	6
37	10	HBV	0	8
38	10	HBV	111-118 (pool)	96-156 (pool)
39	10	HBV	205	9
40	10	HBV	240	13
41	11	HBV	0	11
42	11	HBV	28-56 (pool)	8-100 (pool)
43	11	HBV	169	9
44	11	HBV	223	10

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FIG. 33A

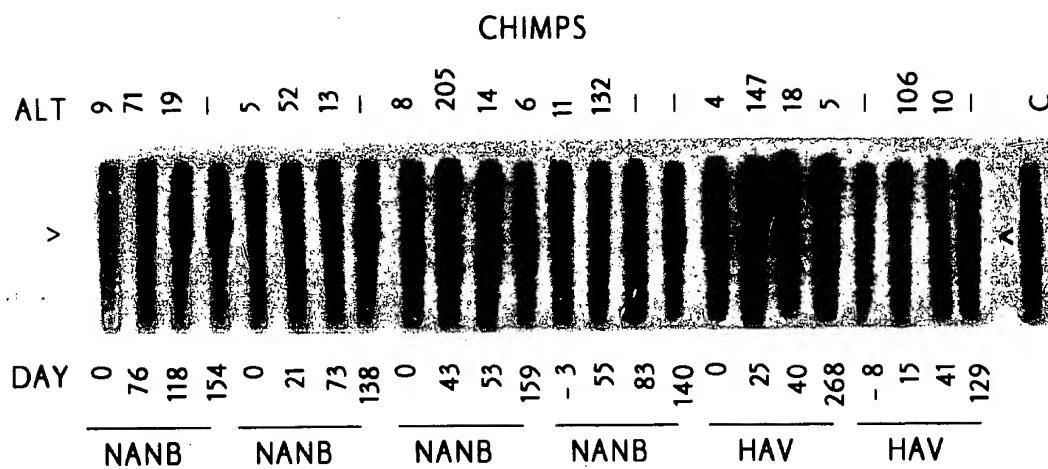


FIG. 33B

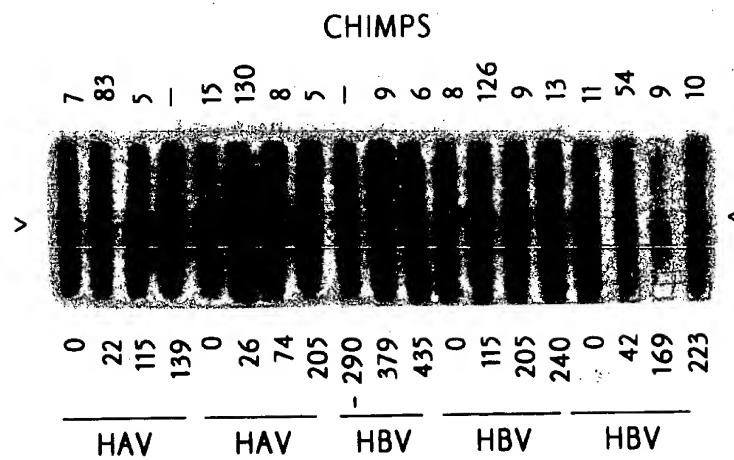




FIG. 34

Lane Number	Patient Reference Number	Diagnosis	ALT Level (μ/ml)
1	1 ¹	NANB	1354
2	1 ¹	NANB	31
3	2 ¹	NANB	14
4	2 ¹	NANB	79
5	2 ¹	NANB	26
6	3 ¹	NANB	78
7	3 ¹	NANB	87
8	3 ¹	NANB	25
9	4 ¹	NANB	60
10	4 ¹	NANB	13
11	5 ¹	NANB	298
12	5 ¹	NANB	101
13	6 ¹	NANB	474
14	6 ¹	NANB	318
15	7 ¹	NANB	20
16	7 ¹	NANB	163
17	8 ¹	NANB	44
18	8 ¹	NANB	50
19	9	NANB	N/A
20	10	NANB	N/A
21	11	NANB	N/A
22	12	Normal	N/A
23	13	Normal	N/A
24	14	Normal	N/A
26	30174	Normal	N/A
27	30105	Normal	N/A
28	30072	Normal	N/A
29	30026	Normal	N/A
30	30146	Normal	N/A
31	30250	Normal	N/A
32	30071	Normal	N/A
33	15	Acute HAV	N/A
34	16	Acute HAV	N/A
35	17	Acute HAV	N/A
36	18	Acute HAV	N/A
37	48088	Acute HAV	N/A
38	47288	Acute HAV	N/A
39	47050	Acute HAV	N/A
40	46997	Acute HAV	N/A
41	19	Convalescent HBV	N/A
42	20	(anti-HB-Sag+ve; anti-HB-Cag+ve)	N/A
43	21	(anti-HB-Cag+ve)	N/A
44	22	(anti-HB-Sag+ve; anti-HB-Cag+ve)	N/A
45	23	(anti-HB-Sag+ve; anti-HB-Cag+ve)	N/A
46	24	(anti-HB-Sag+ve; anti-HB-Cag+ve)	N/A
47	25	(anti-HB-Sag+ve; anti-HB-Cag+ve)	N/A
48	26	(anti-HB-Sag+ve; anti-HB-Sag+ve)	N/A
49	27	(anti-HB-Sag+ve; anti-HB-Sag+ve)	N/A

¹ Sequential serum samples were assayed from these patients

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FIG. 34A

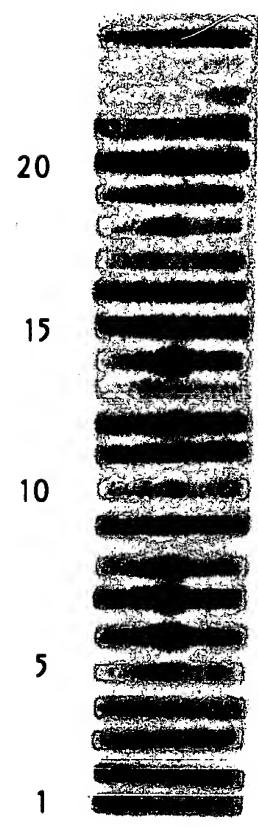


FIG. 34B

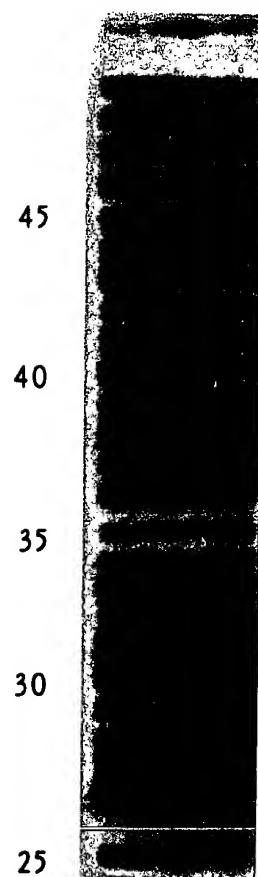




FIG. 35

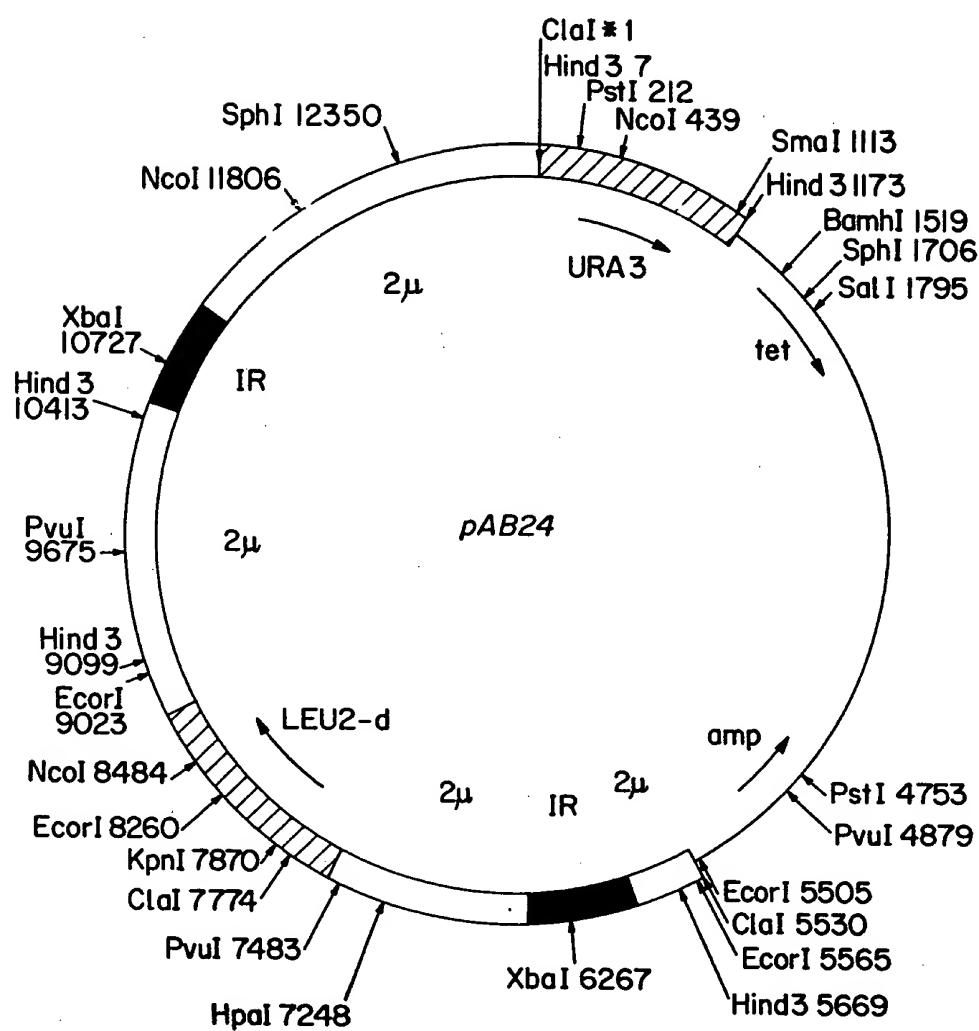




FIG. 36A

1940. 10. 20. 10. 20. 10. 20. 10. 20.

-----SOD-----COOH] [--adaptor---] [NANBH polypeptide]
 AlaCysGlyValIleGlyIleAlaGlnAsnLeuGlyIleArgAspAlaHisPheLeuSer
 1 GCTTGTGGTGTAAATTGGGATCGCCAGAATTGGGATTCGGGATGCCACTTCTATCC
 CGAACACCACATTAACCTAGCGGTCTAAACCTAACGCCCTACGGGTGAAAGATAGG
 >>>>>>>>>>>>>
 GlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCys
 61 CAGACAAAGCAGAGTGGGGAGAACCTCCTACCTGGTAGCGTACCAAGCCACCGTGTGC
 GTCTGTTCTGCTCACCCCTCTTGAAGGAATGGACCATCGCATGGTCGGTGGCACACG
 AlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeu
 121 GCTAGGGCTCAAGCCCCCCCCATCGTGGGACAGATGTGGAAAGTGTGTTGATTGCCCTC
 CGATCCCGAGTTCGGGGAGGGGGTAGCACCTGGTCTACACCTCACAAACTAAGCGGAG
 LysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGlu
 181 AAGCCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGCGCTGTTAGAATGAA
 TTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTT
 IleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGlu
 241 ATCACCCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCGGCGACCTGGAG
 TAGTGGGACTGCGTGGTCAGTGGTTATGTAGTACTGTACGTACAGCCGGCTGGACCTC
 ValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCys
 301 GTCGTCACGAGCACCTGGGTGCTCGTGGCGCGTCTGGCTGCTTGGCCGCGTATTGCG
 CAGCAGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGGGCGATAACG
 LeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIle
 361 CTGTCACACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTTGTCGGGAAGCCGGCAATC
 GACAGTTGTCCGACGCACCAAGTACACCGTCCCAGCAGAACAGGCCCTCGGGCGTTAG
 IleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHis
 421 ATACCTGACAGGGAAAGTCTCTACCGAGAGTCGATGAGATGGAAGAGTGTCTCAGCAC
 TATGGACTGTCCTTCAGGAGATGGCTCTCAAGCTACTCACCTCTACGAGAGTCGTG
 LeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGly
 481 TTACCGTACATCGAGCAAGGGATGATGCTCGCCAGCAGTTCAAGCAGAAGGCCCTCGGC
 AATGGCATGTAGCTCGTCCCTACTACGAGCGGCTGTCAGTTCGTTCCGGGAGCGC
 LeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrp
 541 CTCCTGAGACCCGCGTCCGTCAGGCAGAGTTATGCCCTGCTGCCAGACCAACTGG
 GAGGACGTCAGCTGGCGCAGGGCAGTCGTCAGTTCGTTCCGGGAGCGC
 GlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyr
 601 CAAAAACTCGAGACCTCTGGCGAAGCATAATGTGGAACTTCATCAGTGGGATACAATAC
 GTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTGAAGTAGTCACCCCTATGTTATG
 LeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThr
 661 TTGGCGGGCTGTCAACGCTGCCTGGTAACCCGCCATTGCTTCAAGTGGCTTTACA
 AACCGCCCGAACAGTTCGACGGACCACTGGGGCGTAAAGAAGTAACCTGGAAAATGT
 AlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGly
 721 GCTGCTGTCACCAAGCCCACTAACCAACTAGCCAAACCTCCTCTCAACATATTGGGGGGGG
 CGACGACAGTGGTCGGGTGATTGGTAGTCGGTTGGGAGGAGAAGTTGATAACCCCCCCC
 TrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeu
 781 TGGGTGGCTGCCAGCTCGCCGCCCGGTGCGCTACTGCCTTGTGGCGCTGGCTTA
 ACCCACCAGGGTCAGCAGCGGGGCCACGGCGATGACGGAAACACCCGCGACCGAAT



FIG. 36B

841 AlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGly
GCTGGCGCCGCCATCGCAGTGTGGACTGGGAAGGTCTCATAGACATCCTGCAGGG
CGACCGCGCGGTAGCGTCACAACTGACCCCTCCAGGAGTATCTGTAGGAACGTCCC

901 TyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValPro
TATGGCGGGCGTGGCGGGAGCTCTGTGGATTCAAGATCATGAGCGGTGAGGTCCCC
ATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTAGTACTGCCACTCCAGGGG

961 SerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValVal
TCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTGCCCGGAGCCCTCGTAGTC
AGGTGCCTCCTGGACCAGTTAGATGACGGCGGTAGGAGAGCAGGGCCTGGAGCATCAG

1021 GlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGln
GGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCGGCGAGGGGGCAGTGCAG
CCGCACCAAGACACGTCGTTATGACGCGGGCGTGCAACCGGGCCGCTCCCCGTACGTC

1081 TrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProValHisHis
TGGATGAACCGGGCTGATAGCCTCGCCTCCGGGGGAACCATGTTCCCCAGTCCATCAT
ACCTACTTGGCCGACTATCGGAAGCGGGAGGGCCCCCTGGTACAAAGGGGTCAAGGTAGTA

-----]
LysArgOP
1141 AAGCGTTACGCTCCCTACGGGTGGACTGTGGAGAGACAGGGCACTGCTAAGGCCAAAT
TTCGCAACTGCGAGGGATGCCACCTGACACCTCTGTCCCGTGACGATTCCGGGTTTA

1201 CTCAGCCATGCATCGAGGGGTACAATCCGTATGGCCAACAACACTAGCGCGTACGTAAAGTC
GAGTCGGTACGTAGCTCCCCATGTTAGGCATACCGGGTTGATCGCGCATGCAATTTCAG

1261 TCCTTTCTCGATGGTCCATACCTAGATGCGTTAGCATTAAATCCGAATT
AGGAAAGAGCTACCGGGTATGGAATCTACGCAATCGTAATTAGGCTTAAG

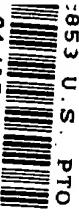
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FIG. 37A

1 2 3



FIG. 37B

1 2



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FIG. 38

1 2 3 4

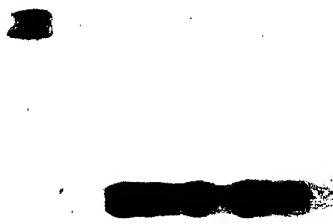
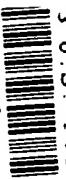


FIG. 40

1 2 3 4

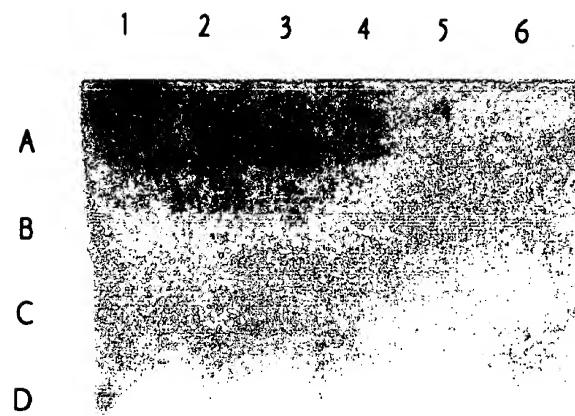


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FIG. 39



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FIG. 41A

A B C



FIG. 41B

A B C





FIG. 42A

HCV	10	20	30	40	50		
	EYVVLLFLLLADARVCSC	LWMMLLISQAEAALENL	VILNAASLAGTHGLVSFLVFFCFA				
MNWVD1	AVSFVTLITGNMSFRDLGRV	MVMVGATMTDDIGMGVTYLALLAAFKVRPTFAAGLLL	RKL				
	130	140	150	160	170	180	
HCV	60	70	80	90	100	110	
	WYLKGKWPAGAVYTFYGMWPL	LLALPQRAYALDTEVAASC	GGVVVLVGLMALT	SPYY			
MNWVD1	TSKELMMTTIGIVLLSQSTI	PETILELTDALALGMMV	LKMVRKMEKYQLAVT	MAILCVP			
	190	200	210	220	230	240	
HCV	120	130	140	150	160	170	
	KRYISWCLWWLQYFLTR	VEAQLHVWIPPLNVRGG	RDAVILLMC	AVHPTLVFDITK	LLLAV		
MNWVD1	NAVILQNAWKVSCTI	LAVVSVSP	LTSSQ	QKADW	IPALT	IKGLNPTA	IF-LT
	250	260	270	280	290		TSR
HCV	180	190	200	210	220	230	
	FGPLWILQASLLKVPYF	-VRVQGLLRF	-CALARKM	IGGHYVQMVI	IKLGALT	GALT	VYNHL
MNWVD1	KKRSWPLNEA	IMAVGMVS	ILASSLLKND	IPMTGPLV	AGGL	LTVCYV	-LT
	300	310	320	330	340	350	GRSADLE
HCV	240	250	260	270	280	290	
	TPLRDWAHNGLRDLAV	AVEPVVFSQM	ETKLITWGAD	TAACGDI	INGLPV	SARRGRE	ILLG
MNWVD1	ADVK-WEDQAEI	SGSSPILS	ITISE-DG	SMSIK	NEEE	EQTL	IT
	360	370	380	390	400	410	RTG
HCV	300	310	320	330	340	350	
	PADGMVSKGWRLL	LAPITAYAQQT	RGLLGCI	ITSLTGR	DKNQ	VEGEVQIV	STAAQTFLATC
MNWVD1	VSIPI	TAAWYL	EVKKQRAGVL	WDVPS	PPPVGKA	ELEDGAYRI	KQKGILGY
	420	430	440	450	460	470	QAGVY
HCV	360	370	380	390	400	410	
	INGVCWT	VYHGAGTR	RTIASPKGP	VIQMYTN	VQDQLV	GWPA	PQGSRS
MNWVD1	KEGTFHT	MWHVTRGA	VLMHKGK	RIEPSWAD	VKKDL	VSCGGG	WKLEG
	480	490	500	510	520	530	KEGE
HCV	420	430	440	450	460	470	
	LYLVTRHAD	VIPVRRRGDS	RGSSLSPRP	ISYLG	SSGGPLLCP	AGHAVG	IFRAAV
MNWVD1	PGKNPRAV	QT	KPGLF	KTN	DKKGKV	VGLY	GNGV
	540	550	560	570	580	590	TRSG



FIG. 42B

HCV	480	490	500	510	520	530
MNWVD1	AKAVDFIPVENLETTMRSPVFTDNSSPPVVPQSFOVAHLHAPTGSGKS--TKVPAAYAAQ					
	600	610	620	630	640	
HCV	540	550	560	570	580	
MNWVD1	AYVSAIAQTEK--SIEDNPEIEDDIFRK--RKLTIMDLHPGAGKTKRYLPAIVRGAIKR					
	650	660	670	680	690	700
HCV	590	600	610	620	630	640
MNWVD1	GYKVLVNPSS--VAATLGFGAYMSKAHGIDPNIRTGVRTITGSPITYSTYKFLADGGC					
	710	720	730	740	750	760
HCV	650	660	670	680	690	700
MNWVD1	GLRTLILAPTRVVAAEMEEALRGLPIRYQTPAIRAEHTGREIVDLMCHATFTMRLL-SPV					
	770	780	790	800	810	820
HCV	710	720	730	740	750	760
MNWVD1	SGGAYDIIICDECHSTDATSIILGIGTVLDQAETAGARLVLATATPPGSVTVPHPNIEEV					
	830	840	850	860	870	880
HCV	770	780	790	800	810	820
MNWVD1	RVPNYNLIMDEAHFTDPASIAARGYISTRVE-MGEAAGIFMTATPPGSRD-PFPQSNAP					
	SS					



FIG. 43

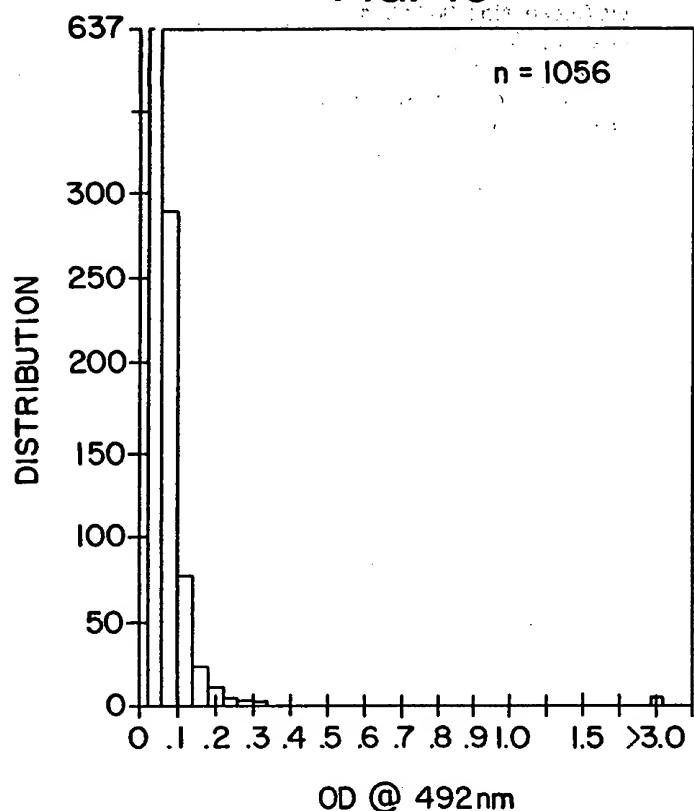


FIG. 44

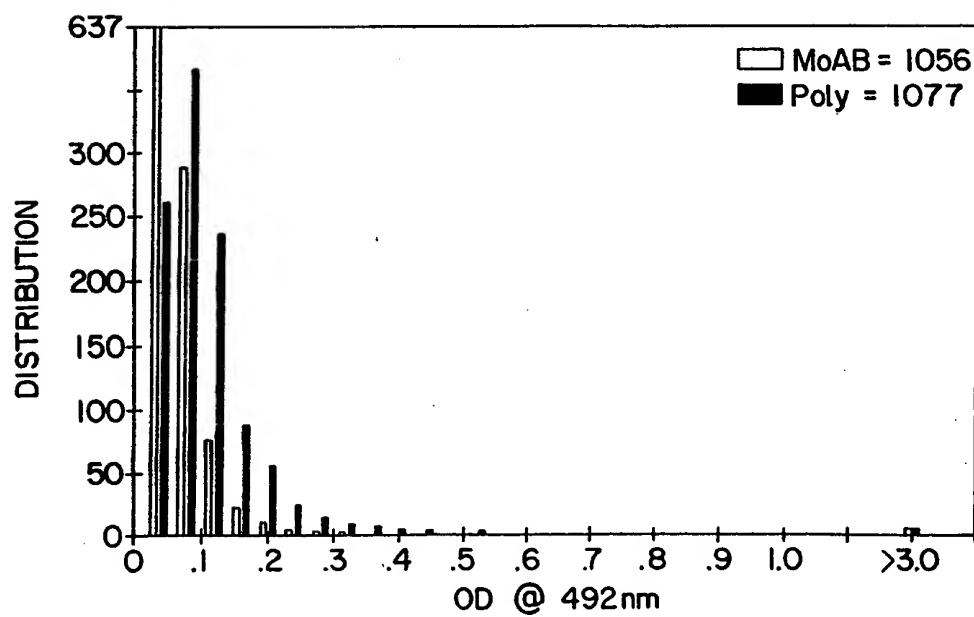




FIG. 45

Name	Common Sequence	Variable Sequence
5'-3-1	AAGCTTGATCGAATTTC	CGATCTTGC
-2		CGATCCTGC
-3		CGATCATGC
-4		CGATCGTGC
-5		CGAAGTTGC
-6		CGAAGCTGC
-7		AGATCTTGC
-8		AGATCCTGC
-9		AGATCATGC
-10		AGATCGTGC
-11		AGAAGTTGC
-12		AGAAGCTGC
-13		CGATCTTGT
-14		CGATCCTGT
-15		CGATCATGT
-16		CGATCGTGT
-17		CGAAGTTGT
-18		CGAAGCTGT
-19		AGATCTTGT
-20		AGATCCTGT
-21		AGATCATGT
-22		AGATCGTGT
-23		AGAAGTTGT
-24		AGAAGCTGT
-25		CGCTCTTGC
-26		CGCTCCTGC
-27		CGCTCATGC
-28		CGCTCGTGC
-29		CGCAGTTGC
-30		CGCAGCTGC
-31		CGCTCTTGT
-32		CGCTCCTGT
-33		CGCTCATGT
-34		CGCTCGTGT
-35		CGCAGTTGT
-36		CGCAGCTGT



FIG. 46A

GLYCYSProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
1 CAGGGCTGTCTGTAGAGGGCTAGCCAGGCTGCCGACCCCTTACCGATTTGACCAAGGGCTGGG
GTCGACAGGACTCTCGATCGGTGACGGCTGGAAATGGCTAAACTGGTCCCCGACCC

ProIleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrPro
61 GGCCTATCAGTTATGCCAACGGAAGGGGGCCCCGACCAAGGGCCCCCTACTGCTGGCACTACC
CGGGATAGTCAATAACGGTTGCCTTCGCCGGGGCTGGTCGGGGGGATGACCAACGGTGTATGG

ProLysProCysGlyIleValProAlaLysSerValCysGlyProValTyrCysPheThr
121 CCCCAAAACCTTGGGTATTGTGCCGGAAAGACTGTGTGGTCCGGTATATTGCTTC
GGGGTTTGGAAACGCCATAACACGGGGCTTCTCACACACACCAAGGCCATATAACGAAGT

ProSerProValValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
181 CTCCCAGCCCCGTGGTGGTGGAAACGACCCGACAGGTCTGGGGCCCCACCTACAGCTGGG
GAGGGTGGCACCAACCACCCCTGGCTGTCCAGGCCGGGTGGATGTCGACCC

GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
241 GTGAAATGATAACGGACGTCTTCGTCTTAACAAATACCAAGGCCACCCGCTGGCAATTGGT
CACTTTACTATGCCCTGGCAGAACGGCAGGAATTGTTATGGCTGGGGGACCCGGTAAACCA

GLYCYSThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
301 TCGGTTGTTACCTGGATGAACCTCAACTGGATTCAACAAAGTGTGGGAGGGCCCTTGTG
AGCCAACATGGACCTACTTGAGTTGACCTAACGGCTAACGGCTGGGGAGGAACAC



FIG. 46B

IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
361 TCATCGAGGGGGCAACAAACACCCCTGCACAGCCCCACTGATTGCTCCGCAAGCATTG
AGTAGGCTCCCCGGCCCGTGTGGGACGTGACGGGTGACTAACCGAAGGGGTTCGCTAG

AspAlaThrTyrSerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAsp
421 CGGACGCCACATACTCTCGGTGGCTCCGGTCCCTGGATCACACCCAGGTGCTGTCG
GCCCTGGGGTGTATGAGGAGCCACGCCAGGGGCCAGGGACCTAGTGTGGTCCACGGACACGC

TyrProTyrrArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
481 ACTACCCGTATAAGGCTTTGGCATTATCCTTGACCATCACA
TGATGGCATATCCGAAACCGTAATAAGGAACATGGTAGTGTGATGTGATAATTAGT

MettYryvalGlyGlyvalGluWhisargLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
541 GGATGTACGTGGAGGGGTCTGGACAGGCACAGGCTGGAAAGCTGCCTGCACACTGGACGGCC
CCTACATGCACCCCTCCCCAGCTCGTGTCCGACCTTCGACGGACGTTGACCTTGCGGCCCGC

ArgCysAspLeuGluAspArgSerGluLeuSerProLeuLeuThrThrThr
601 AACGGTGGATCTGGAAAGATAGGGACAGGTCCGAGCTCAGCCGGTTACTGCTGACCACTA
TTGCAACGGCTAGACCTCTATCCGTCCAGGCTCGAGTCGGCAATGACGACTGGTGT

GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
661 CACAGTGGCAGGTCCCTCCCGTGTCCCTGCACAAACCCCTGTCACAAACGGCTCA
GTGTCACCGTCCAGGAGGGCACAGGAAGTGTGGACGGCTGGAAACAGGTGGGGAGT



FIG. 46C

-----Overlap with Combined ORF of DNAs 12f through 15e-----
HisLeuHisGlnAsnIleLeuAlaAspValGlnTyrLeuTyrglyValGlySerSerIleAla
721 TCCACCTCACCAGAACATTGTGGACGTGCAGTACTTGTACGGGGTGGGGTCAAGGCATCG
AGGTGGAGGTGGTCTTGTAAACACCTGCACGTCACTGAAACATGCCACCCACCCAGTCGTAGC

SerTrpAlaIleLysTrpGlutYrValValLeuLeuPheLeuIleSerGlnAlaGluAlaAlaLeuGluAsn
781 CGTCCTGGGCCATTAAAGTGGGAGTACGTGCTCCTGCTGGTCCCTCTGCTGTTGCAGACGGCG
GCAGGACCCGGTAATTCAACCCCTCATGCAGCAGGACAAGGAAGACGAAACGTCGTCTGGCGCG

ValCysSerCysLeuTrpMetMetLeuIleSerGlnAlaGluAlaAlaLeuGluAsn
841 GCGTCTGCTCCCTGCTGGATGATGGCTACTCATATCCCAAGGGAAAGCGGGCTTGGAGA
CGCAGACGGAGAACCTACTACGATGAGTATAAGGTTGGCTGCCTTCGGCGAAACCTCT

LeuValIleLeuAsnAlaAlaSerLeuAlaGlyLeuIleSerPheLeuVal
901 ACCTCGTAATACTTAATGCAGCATCCCTGGCCGGGACGGCACGGCTTGTATCCTTCCTCG
TGGAGCATATTAGAATTACGTGCTAGGGACCCGGCTGGGTGCGAGAACATAGGAAGGAGC

PhePheCysPheAlaTrpTyrIleLysGlyLysTrpValProGlyAlaValTyrThrPhe
961 TGTCTCTGGCTTGCATGGTATCTGAAGGGTAAGTGGTACACCTACACCT
ACAAGAACGAAACGTACCATAGACTTCCATTACCCACGGCCCTGGCCAGATGTGGA



FIG. 46D

TyrGlyMetTrpProLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeu
 1021 TCTACGGGATGTGGCCTCTCCTGCTCTGTTGGCGTTGCCCAAGGGGTACGGC
 AGATGCCCTACACGGAGGAGCAGGACAACGGCAACGGGTCGCCGCATGGCG

AspThrGluValAlaSerCysGlyGlyValValLeuMetAlaLeuThr
 1081 TGGACACGGAGGTGCCGGTCTGCGGTGTTGATGGCTAA
 ACCTGTGCCCTCACCGGGCAGCACCCACAAAGGAGCCAACTACCGGATT

1141 LeuSerProTyptyrLysArgTyrylserTrpCysLeuTrpTrpLeuGlnTyrPheLeu
 1141 CTCTGTACCATATTACAAGCGCTATACTAGCTGGTGGCTTGCAGTATTTC
 GAGACAGCTGGTATAATGTTCGCGATAATAGTCGACCACCGAACCTAAAGTCAAAAG

1201 ThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArg
 TGACCAAGTGGAAAGCGCAACTGCACGTGGATTCCCCCTCAACGTCCGAGGGGGC
 ACTGGTCTCACCTTCGCGTTGACGTGCACACCTAACCTAAAGGGGGAGTTGCAGGCTCCCCCG

1261 ASPAvalIleLeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLys
1261 GCGACGGCTGTCATCTTACTCATGGTGTGCTGTACACCCGACTCTGGTATTGACATACCA
CGCTGCCACAGTAGAAATGAGTACACACGACATTGGGGCTGAGACCCATAAACTGAGTGGT

LeuLeuLeuAlaValAlaPheGlyProLeuTrpIleGlnAla
1321 AATTGCTGCTGGCCGCTTCGGACCCCTTGGATTCTCAAGCCAG
TTAACCGACCGACCCGGCAGAACGCCCTGGGGAAACCTAACGAAAGTTGGTC



FIG. 47A

1 GlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
 1 CAGGCTGTCCTGAGAGGGCTAGCCAGCTGCCGACCCCTTACCGATTTGACCAAGGGCTGGG
 61 GTCCGACAGGACTCTCCGATCGGTCGACGGCTGGGAATGGCTAAACTGGTCCCACCC
 121 ProIleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrPro
 61 GCCCTATCAGTTATGCCAACGGAAGCGGCCGACAGCAGCCACTGCTGGCACTTACCC
 181 CGGGATAGTCATAACGGTTGCCCTGCCGGGCTGGTCGCGGGATGACGACCGTATGG
 241 ProLysProCysGlyIleValProAlaLysSerValCysGlyProValTyrCysPheThr
 121 CCCCAAAACCTGCGGTATTGTGCCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCA
 301 GAGGGTTTGGAACGCCATAACACGGCGCTCTCACACACACCAGGCCATAACGAAGT
 361 ProSerProValValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
 181 CTCCCAGCCCCGTGGTGGGGAACGACCGACAGGTGGCGCGCCACCTACAGCTGGG
 421 GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
 241 GTGAAAATGATACTGGACGTCTCGTCTTAACAATACCAGGCCACCAGCGCTGGGCAATTGGT
 301 GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
 361 TCGGTTGTAACCTGGATGAACCTAACCTGGATTCAACAAAGTGTGCGGAGCGCCTTGTG
 421 IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
 361 TCATCGGAGGGGGCGGGCAACAAACACCCCTGCACTGCCCACTGATTGCTCCGCAAGCATC
 481 AspAlaThrTyrSerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAsp
 421 CGGACGCCACATACTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGT
 541 TyrProTyrArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
 481 CGCTCGGTGTATGAGAGGCCACGCCAGGGCAGGGACCTAGTGTGGGTCCACGGGACAGC
 541 MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
 541 GGATGTACGTGGGAGGGGTCGAACACAGGCTGGAGCTGCCTGCAACTGGACGCGGGGCG
 601 ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrThr
 541 CCTACATGCACCCCTCCCCAGCTTGTGCCACCTCGACGGACGTTGACCTGCGCCCCCG
 661 GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
 601 AACGGTTGCGATCTGGAAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCACTA
 661 CACAGTGGCAGGTCCCTCCCGTGTCCCTTACAACCCCTACCAGCCTGTCACCGGGCTCA
 721 HisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAla
 661 GTGTCACCGTCCAGGAGGGACAAGGAAGTGTGGGATGGTCGGAACAGGTGGCCGGAGT
 721 SerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArg
 721 781 CGTCCTGGGCCATTAAGTGGGAGTACGTCGTTCTCTGTTCTCTGCTTGAGCAGCGC
 841 ValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaLeuGluAsn
 781 GCAGGACCCGGTAATTCACCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCCG
 901 LeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuVal
 841 ACCTCGTAATACTTAATGCAGCATCCCTGGCCGGACGCACGGCTTGTATCCTCCCTG
 901 TGGAGCATTATGAATTACGTCGTAGGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGC



FIG. 47B

961 PhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPhe
 TGTTCTCTGCTTGCATGGTATTTGAAGGGTAAGTGTTGGTCCCCGGAGCGGTCTACACCT
 ACAAGAACGAAACGTACCATAAACTTCCCATTACCCACGGGCGTCGCCAGATGTGGA

 1021 TyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeu
 TCTACGGGATGTGGCCTCTCTCTGCTCTGTTGGCGTGGCCAGCGGGCGTACGCGC
 AGATGCCCTACACCGGAGAGGGAGGACGAGGACAACCGAACGGGGTCGCCAGTGC

 1081 AspThrGluValAlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThr
 TGGACACGGAGGTGGCGCGTGTGTTGGCGGTGTTCTCGTCGGGTTGATGGCGCTGA
 ACCTGTGCCTCCACCGGCGCAGCACACGCCACAACAAGAGCAGGCCAACTACCGCGACT

 1141 LeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeu
 CTCTGTACCATATTACAAGCGCTATATCAGCTGGTGTGTTGAGTGCACCGAACACCA
 GAGACAGTGGTATAATGTCGATATAGTCGACCGAACACCAAGCTACCGCAGTCA

 1201 ThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArg
 TGACCAAGAGTGGAAAGCGCAACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGG
 ACTGGTCTCACCTTCGCGTTGACGTGACACCTAACGGGGGGAGTTGCAGGCTCCCCC

 1261 AspAlaValIleLeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLys
 GCGACGCCGTCATCTTACTCATGTGTGCTGTACACCCGACTCTGGTATTGACATCACCA
 CGCTGCGGAGTAGAATGAGTACACACGACATGTGGGCTGAGGACCATAAACTGTAGTGG

 1321 LeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValPro
 AATTGCTGCTGGCGTCTCGGACCCCTTGGATTCTCAAGCCAGTTGCTTAAAGTAC
 TTAACGACGACGGGAGAACCTAACGAGTTGGTCAAAACGAATTTCATG

 1381 TyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGly
 CCTACTTGTGCGCGTCCAAGGCCTTCTCGGTTGCGCGTTAGCGCGGAAGATGATCG
 GGATGAAACACGCGCAGGTTCCGGAAGAGGCCAACGCGCAATCGCCTTACTAGC

 1441 GlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyr
 GAGGCCATTACGTGCAAATGGTCATCATTAAAGTTAGGGCGCTTACTGGCACCTATGTT
 CTCCGGTAATGACCGTTACAGTAGTAATTCAATCCCCGCAATGACCGTGAGTACAAA

 1501 AsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAla
 ATAACCATCTCACTCCTTCGGGACTGGCGCACAAACGGCTGCGAGATCTGGCGTGG
 TATTGGTAGAGTGAGGAGAACCCCTGACCCGCGTGTGCGAACGCTTAGACCGGACC

 1561 ValGluProValValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThr
 CTGTAGAGCCAGTCGTTCTCCAAATGGAGACCAAGCTCATCACGTGGGGGAGATA
 GACATCTCGGTCAAGCAGAACAGGGGTTACCTCTGGTGTGAGTAGTCACCCCCGGTCTAT

 1621 AlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIle
 CCGCCGCGTGCAGTGCACATCATCACGGCTTGCCTGTTCCGCCAGGGGGGGAGA
 GCGCGCAGCCACTGTAGTAGTTGCCAACGGACAAAGCGGGCGTCCCCGGCCCTCT

 1681 LeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThr
 TACTGCTCGGGCCAGCCGATGGAATGGTCTCAAGGGGTGGAGGTTGCTGGCGCCCATCA
 ATGACGAGCCGGTCGGCTACCTTACCAAGGGTCCCCACCTAACGACCGCGGGTAGT

 1741 AlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArg
 CGGCGTACGCCAGCAGAACAGGGCCTCTAGGGTCATAATCACCGCTAACCTGGCC
 GCCGCATGCGGGTCGTGTTCCCGGAGGATCCACGTATTAGTGGTCGGATTGACCGG

 1801 AspLysAsnGlnValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeu
 GGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTCACACTGCTGCCAACCTTCC
 CCCTGTTTTGGTTCACCTCCACTCCAGGTCTAACACAGTTGACGACGGGTTGGAGG

 1861 AlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIle
 TGGCAACGTGCATCAATGGGTGTGACTGCTACCAACGGGGCCGGAACGAGGACCA
 ACCGTTGCACGTAGTTACCCACACGACCTGACAGATGGTGCCTGGCTCCTGGT

 1921 AlaSerProLysGlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGly
 TCGCGTCACCCAGGGTCTGTCATCCAGATGTACCAATGTAGACCAAGACCTTG

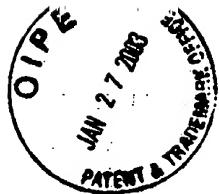


FIG. 47C

TrpProAlaProGlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeu
 1981 GCTGGCCCGCTCCGCAAGGTAGCCGCTATTGACACCCCTGCACCTGGCTCTCGGACC
 CGACCGGGCGAGGGCGTCCATCGCGAGTAACGTGGGACGTGAACGCCGAGGGAGCCTGG

 TyrLeuValThrArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGly
 2041 TTTACCTGGTCACGAGGCACGCCGATGTCATTCCCGTGCGCCGGCGGGGTGATAGCAGGG
 AAATGGACCACTGCTCCGTGCCGCTACAGTAAGGGCACGCCGCCGGGGGGGGGGGGGGGG

 SerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeu
 2101 GCAGCCTGCTGTCGCCCCGGCCATTCTACTTGAAGGCTCTCGGGGGTCCGCTGT
 CGTCGGACGACAGCGGGGCCGGTAAAGGATGAACCTTCCGAGGAGGCCCGAGGCGACA

 CysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAla
 2161 TGTGCCCCGCGGGGACGCCGTTGGCATATTAGGGCCGCCGGTGTGACCCCGTGGAGTGG
 ACACGGGGCGCCCCGTGCCGACCCGTATAAAATCCGGGCCACACGTGGCACCTCAC

 LysAlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPhe
 2221 CTAAGGCGGTGACTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGT
 GATTCCGCCACCTGAAATAGGGACACCTCTGGATCTGTGGTACTCCAGGGGCCACA

 ThrAspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAla
 2281 TCACGGATAACTCCCTCCACCAAGTAGTGCCCCAGAGCTCCAGGTGGCTCACCTCCATG
 AGTGCCTATTGAGGAGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTAC

 ProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLys
 2341 CTCCCACAGGCAGCGGGCAAAAGCACCAAGGTCCCGCTGCATATGCAGCTCAGGGCTATA
 GAGGGTGTCCGTGCCGTTCTGGTCCAGGGCCGACGTACGTCGAGTCCCAGATAT

 ValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLys
 2401 AGGTGCTAGTACTCAACCCCTCTGGCTGCAACACTGGCTTGGTGTACATGTCCA
 TCCACGATCATGAGTTGGGGAGACAACGACGTTGTGACCCGAAACACGAAATGTACAGGT

 AlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerPro
 2461 AGGCTCATGGGATCGATCTAACATCAGGACCGGGGTGAGAACAAATTACACTGGCAGCC
 TCGAGTACCCCTAGCTAGGATTGTAGTCTGGCCCCACTCTGTTAACGGTACGGTCGG

 IleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyr
 2521 CCATCACGTACTCCACCTACGGCAAGTCCCTGGCAGCGCGGGGTGCTCGGGGGCGCTT
 GGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAA

 AspIleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGly
 2581 ATGACATAATAATTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTGGGCATCG
 TACTGTATTATTAACACTGCTCACGGTGAGGTGCCTACGGTGAGGTAGAACCCTGAGC

 ThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThr
 2641 GCACTGTCCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCA
 CGTACAGGAACCTGGTCGCTCTGACGCCCGCTCTGACCAAACACGAGCGGTCGG

 ProProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThr
 2701 CCCCTCCGGGCTCCGTACTGTGCCCATCCAAACATCGAGGAGGTGCTCTGTCACCA
 GGGGAGGGCCCGAGGCAGTGACACGGGTAGGGTTGTAGCTCTCCAACGAGACAGGTGGT

 GlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHis
 2761 CCGGAGAGATCCTTTTACGGCAAGGCTATCCCCCTGAAAGTAATCAAGGGGGGAGAC
 GGCTCTAGGGAAAAATGCCGTTCCGATAGGGGAGCTTCATTAGTCCCCCTCTG

 LeuIlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeu
 2821 ATCTCATCTCTGTCAATTCAAAGAAGAAGTGCAGCAACTGCCGAAAGCTGGTCGCAT
 TAGAGTAGAAGACAGTAAGTTCTTCAGCTGCTTGAGCGCGTTCGACCCAGCGTA

 GlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGly
 2881 TGGGCATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCGTCATCCGACCG
 ACCCGTAGTTACGGCACCGATGATGGGCCAGAAACTGCACAGGCAGTAGGGCTGGTCGC

 AspValValValAlaTyrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSer
 2941 GCGATGTTGTCGTCGGCAACCGATGCCCTCATGACCGGCTATACCGGCAGCTCGACT
 CGCTACAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGA



FIG. 47D

Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe
 3001 CGGTGATAGACTGCAATACGTGTGTCACCCAGACAGTCGATTCTAGCCTTGACCTACCT
 GCCACTATCTGACGTTATGCACACAGTGGGTCTGTCAGCTAAAGTCGGAACCTGGGATGGA

 Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg
 3061 TCACCATGAGACAATACCGCTCCCCCAGGATGCTCTCCGCACTCAACGTCGGGCA
 AGTGGTAACCTGTTAGTGCAGGGGGCTACGACAGAGGGCGTAGTTGAGCCCCGT

 Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly
 3121 GGACTGGCAGGGGGAAAGCCAGGCATCTACAGATTGTGGCACCGGGGAGCGCCCTCG
 CCTGACCGTCCCCCTCGGTAGATGCTAAACACCGTGGCCCCCTCGCGGGGAGGC

 Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu
 3181 GCATGTTGACTCGTCCGCTCTGTGAGTGTCTAGACGAGCTGTGCTTGGTATGAGC
 CGTACAAGCTGAGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCG

 Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val
 3241 TCACGCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGACACCCCCGGGGCTTCCG
 AGTGCAGGGCGGCTCTGATGCTAACCGATGCTGATGACTTGTGGGGCCCCGAAGGGC

 Cys Gln Asp His Leu Glu Phe Trp Glu Gln Val Phe Thr Gly Leu Thr His Ile Asp Ala
 3301 TGTCGAGGACCATCTTGAATTGGGGAGGGCTTTACAGGCCTACTCATATAGATG
 ACACGGTCTGGTAGAACCTAAACCCCTCCGAGAAATGTCGGAGTAGTATATCTAC

 His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln
 3361 CCCACTTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTCTTACCTGGTAGCGTAC
 GGGTAGAAAGATAGGGTCTGTTCTGTCACCCCTTGGAAAGGAATGGACCATCGCATGG

 Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Ser Trp Asp Gln Met Trp Lys Cys
 3421 AAGCCACCCTGTGCGCTAGGGCTAACGCCCTCCCCATCGTGGGACCAGATGTGGAAGT
 TTGGTGGCACACCGCATTCCGAGTTGGGGAGGGTAGCACCCCTGGTCTACACCTCA

 Leu Ile Arg Leu Lys Pro Thr Leu His Gln Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala
 3481 GTTTGATTGCTCTAACGCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGCG
 CAAACTAACCGAGTTGGGTGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGC

 Val Gln Asn Glu Ile Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met Ser
 3541 CTGTTAGAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCATGT
 GACAAGTCTTACTTGTGGACTGCGTGGTCAGTGGTTATGTAGTACTGTACGTACA

 Ala Asp Leu Glu Val Val Thr Ser Thr Trp Val Leu Val Gln Gln Val Leu Ala Ala Leu
 3601 CGGCCGACCTGGAGGTGTCACGAGCACCTGGGTGCTCGTGGCGCGTCTGGCTGCTT
 GCCGGCTGGACCTCCAGCAGTGTGCTGGACCCACGAGCAACCGCCGAGCACGAA

 Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gln Arg Val Val Leu Ser Gly
 3661 TGGCCGCGTATTGCTGTCAACAGGCTGCGTGGTCAATAGTGGGAGGGTGTCTTGTCCG
 ACCGGCGATAACGGACAGTTGTCGACGCACCAGTATCACCCGTCAGCAGAACAGGC

 Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Gln Phe Asp Glu Met Glu Glu
 3721 GGAAGCCGGCAATCATACCTGACAGGGAAAGTCCTCACCGAGAGTTGCGATGAGATGGAAG
 CCTTCGGCCGTTAGTATGGACTGTCCTCAGGAGATGGCTCTCAAGCTACTTACCTT

 Cys Ser Gln His Leu Pro Tyr Ile Glu Gln Gln Met Met Leu Ala Glu Gln Phe Lys Gln
 3781 AGTGCCTCTAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTCAAGC
 TCACGAGAGTCGTGAATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTTCG

 Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val
 3841 AGAAGGCCCTCGGCCTCTGCAAGACCGCGTCCCGTCAGGCAGAGGTTATGCCCTGCTG
 TCTTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGCTCCAATAGCGGGGACGAC

 Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe Ile Ser
 3901 TCCAGACCAACTGGAAAAACTCGAGACCTTCTGGCGAAGCATATGTGGAACCTTCATCA
 AGGTGGTTGACCGTTTGTAGCTGGAAGACCCGCTCGTATAACACCTTGAAGTAGT

 Gly Ile Gln Tyr Leu Ala Gln Leu Ser Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu
 3961 GTGGGATAACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCAT
 CACCCATGTTATGAACCGCCCCAACAGTTGCGACGGACCATTGGGGCGGTAAAGAAGTA



FIG. 47E

MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
 4021 TGATGGCTTTACAGCTGCTGTACCAAGCCCACAAACCAACTAGCCAAACCTCTTC
 ACTACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTATCGGTTGGGAGGAGAAGT

 IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
 4081 ACATATTGGGGGGGGTGGGTGGCTGCCAGCTGCCGCCCCGGTGCCGCTACTGCC
 TGTATAACCCCCCCCACCCACCGACGGTCAGCAGGGCCACGGCGATGACGGAAAC

 GlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
 4141 TGGGCCTGGCTTAGCTGGCGCCATCGGCAGTGGACTGGGAAAGGTCTCATAG
 ACCCGCAGCGAACATGACCGCGCGTAGCCGTACAACCTGACCCCTCAGGAGTATC

 IleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSer
 4201 ACATCCTTGCAAGGGTATGGCGGGCGTGGCGGGAGCTCTTGCGATTCAAGATCATGA
 TGTAGGAACGTCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACT

 GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
 4261 GCGGTGAGGTCCCTCCACGGAGGACCTGGTCAACTACTGCCCGCATCCCTCG
 CGCCACTCCAGGGGAGGTGCGCTCTGGACCAGTTAGATGACGGCGTAGGAGAGCGGGC

 AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
 4321 GAGCCCTCGTAGTCGGCGGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCC
 CTCGGGAGCATCAGCCGACCCAGACAGTCGTTAGTACGCGGCGTAGGAGAGCGGGC

 GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
 4381 AGGGGGCAGTGCAGTGGATGAACGGCTGATAGCCTTCGCGCTCCGGGGAACATGTT
 TCCCCCGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAA

 ProThrHisTyrValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSer
 4441 CCCCCACGCACTACGTGCCGGAGAGCGATGCACTGCCGCGTCACTGCCACTCAGCA
 GGGGGTGCATGACCGCTCTCGCTACGTCACGGGCGACTGACGGTATGAGTCGT

 LeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThr
 4501 GCCTCACTGTAACCCAGCTCTGAGGCAGTCACCGACTGGATAAGCTCGGAGTGTACCA
 CGGAGTACATTGGGTCGAGGACTCCGCTGACGTGGTACCTATTGAGCCTCACATGGT

 ProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAsp
 4561 CTCCATGCTCCGGTCTGGCTAAGGACATCTGGACTGGATATGCGAGGTGTTGAGCG
 GAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCCTGACCTATACGCTCCACA
 ACTCG

 PheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSer
 4621 ACTTTAACCTGGCTAAAGCTAACGCTATGCCACAGCTGCCGGGATCCCCTTGT
 TGAAATTCTGGACCGATTTCGATTGAGTACGCTGACGGTGTGACGGACCCCTAGGGAA
 ACACA

 CysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMetHisThrArgCysHis
 4681 CCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATATGCACACTCG
 CGGACGGTCGCGCCATATTCCCCAGACCGCTCACCTGCCGTAGTACGTGAGCGACGG

 CysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArg
 4741 ACTGTGGAGCTGAGATCACTGGACATGTCACAAACGGGACGATGAGGATGTCGG
 TGACACCTCGACTCTAGTGCACCTGTACAGTTTGCCCTGCTACTCCTAGCAGCCAGGAT

 ThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCys
 4801 GGACCTGCAGGAACATGTGGAGTGGGACCTCCCCATTAATGCTACACCACGGG
 CCTGGACGTCCTGTACACCTCACCCCTGGAAGGGTAAATTACGATGTGGTGC
 CGGGGG

 ThrProLeuProAlaProAsnTyrThrPheProIleAsnAlaTyrThrThrGlyProCys
 4861 GTACCCCCCTTCCTGCGCCGAACTACACGTTCGCGCTATGGAGGGTGTCTGC
 AGAGGAATCATGGGGGGAAAGGACGCGGCTTGATGTGCAAGCGCGATA
 CCTCCACAGACGTCTCCTTA

 ValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeu
 4921 ATGTGGAGATAAGGCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACT
 GACAATCTACACCTTATTCCGTCACCCCTGAAGGTGATGCACTGCCACT
 GATGACTGTTAG

 LysCysProCysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeu
 4981 TCAAAATGCCGTGCCAGGTCCATGCCCGAATTTTCA
 CAGAATTGGACGGGTGCGC
 AGTTTACGGGACGGTCCAGGGTAGCGGGCTTAAAAGTGTCTAACCTGCCACGCGG



FIG. 47F

HisArgPheAlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGly
 5041 TACATAGGTTTGCGCCCTGCAAGCCTTGCTGGGAGGAGGTATCATTAGAGTAG
 ATGTATCCAAACCGGGGGGACGTTGGAAACGACGCCCTCCTCCATAGTAAGTCTCATC

 LeuHisGluTyrProValGlySerGlnLeuProCysGluProGluProAspValAlaVal
 5101 GACTCCACGAATACCCGGTAGGGTCGCAATTACCTTGCAGGCCGAACCGGACGTGGCG
 CTGAGGTGCTTATGGGCCATCCCAGCGTTAATGGAACGCTCGGGTTGGCTGCACCGGC

 LeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeu
 5161 TGTGACGTCCATGCTCACTGATCCCTCCATATAACAGCAGAGGCCGGCGGAAGGT
 ACAACTGCAGGTACGAGTACTAGGGAGGGTATATTGTCGTCGCCGGCCGCTTC

 AlaArgGlySerProProSerValAlaSerSerAlaSerGlnLeuSerAlaProSer
 5221 TGGCGAGGGGATCACCCCCCTCTGTGGCCAGCTCTGGCTAGCCAGCTATCCGCTCCAT
 ACCGCTCCCTAGTGGGGGAGACACCGGTCGAGGAGGCCGATGGTCGATAGGCGAGGTA

 LeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsn
 5281 CTCTCAAGGCAACTTGCACCGCTAACCATGACTCCCCTGATGCTGAGGCTCATAGAGGCA
 GAGAGTTCCGTGAACTGGCATTGGTACTGAGGGACTACGACTCGAGTATCTCCGGT

 LeuLeuTrpArgGlnGluMetGlyAsnIleThrArgValGluSerGluAsnLysVal
 5341 ACCTCCTATGGAGGCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAG
 TGGAGGATACCTCCGTCCTCACCCGGCTTGTAGTGGTCCAACTCAGTCTTTGTTTC

 ValIleLeuAspSerPheAspProLeuValAlaGluGluAspGluArgGluIleSerVal
 5401 TGGTGATTCTGGACTCCTTCGATCCGCTGTGGCGGAGGAGACGAGCGGGAGATCTCG
 ACCACTAAGACCTGAGGAAGCTAGGCAACACCGCCTCTGCTGCCCTAGAGGC

 ProAlaGluIleLeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArg
 5461 TACCCGCAGAAATCCTGCGGAAGTCTCGGAGATTGCCCAGGCCCTGCCGTTGGCGC
 ATGGCGTCTTCTAGGACGCCCTCAGAGCCTCTAACGGGGTCCGGGACGGGAAACCCGCG

 ProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyrGluProProVal
 5521 GGCCGGACTATAACCCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACCTG
 CCGCCTGATATTGGGGGCGATCACCTCTGACCTTTTGGCTGATGCTTGGTGGAC

 ValHisGlyCysProLeuProProLysSerProProValProProProArgLysLys
 5581 TGGTCATGGCTGTCCGCTCCACCTCAAAGTCCCCTGTGCTCCGCTCGGAAGA
 ACCAGGTACCGACAGGCGAAGGTGGAGGTTCAAGGGAGGACACGGAGGCGGAGCCTTC

 ArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArg
 5641 AGCGGACGGTGGTCTCACTGAATCAACCCATCTACTGCTTGGCGAGCTGCCACCA
 TCGCCTGCCACCAGGAGTGACTTAGTGGGATAGATGACGGAACCGGCTGAGCGGTGGT

 SerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrSerSerGlu
 5701 GAAGCTTGGCAGCTCTCAACTCCGGCATTACGGGCGACAATAACGACAACATCCTCTG
 CTTC6AAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTATGCTGTTAGGAGAC

 ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
 5761 AGCCCGCCCTCTGGCTGCCCGACTCCGACGCTGAGTCTTACCTCCATGCC
 TCGGCGGGGAAGACCGACGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGG

 LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
 5821 CCCTGGAGGGGAGCCTGGGATCCGGATCTAGCGACGGGTCAAGGTCAACGGTCAGTA
 GGGACCTCCCCCTCGGACCCCTAGGCCTAGAACATGCTGCCAGTACCAAGTTGCCAGTC

 GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
 5881 GTGAGGCCAACCGCGGAGGATGTCGTGCTGCTCAATGCTTACTCTGGACAGGCGAC
 CACTCCGGTTGCGCCTCCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGT

 ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
 5941 TCGTCACCCCGTGCAGCCGGAAGAACAGAAACTGCCCATCAATGCACTAACGCAACTCGT
 AGCAGTGGGGCACGCGGCCCTTGTCTTGTGACGGTAGTTACGTGATTGCTTGGAGCA

 LeuArgHisAsnLeuValTyrSerThrSerArgSerAlaCysGlnArgGlnLys
 6001 TGCTACGTCACCAACAAATTGGTGTATTCCACCCACCTCACGCAAGTGCTTGCCAAAGGCAGA
 ACGATGCACTGGTGTAAACACATAAGGTGGAGTGCCTCACGAACCGGTTCCGTCT



FIG. 47G

LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGlu
6061 AGAAAGTCACATTGACAGACTGCAAGTCTGGACAGCATTACCGAGCTACTCAAGG
TCTTCACTGTGACGTTCAAGACCTGTCGGTAATGGTCTGCATGAGTTCC
ValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSer
6121 AGGTTAAAGCAGCGCGTCAAAAGTGAAGGCTAACTGCTATCGTAGAGGAAGCTTGCA
TCCAATTCGTCGCCGCAGTTTCACTTCGATTGAACGATAGGCATCTCCTCGAACGT
LeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCys
6181 GCCTGACGCCCAACTCAGCCAATCAAGTTGTTATGGGGCAAAAGACGTCCGTT
CGGACTGCGGGGGTGTAGTCGGTTAGGTTCAAACCAATACCCGTTCTGCAGGCAA
HisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsn
6241 GCCATGCCAGAAAGCCGTAAACCAACATCAACTCCGTTGGAAAGACCTCTGGAAGACA
CGGTACGGTTTCCGGCATTGGGTAGTTGAGGACACCTTCTGGAAGACCTCTG
ValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGlu
6301 ATGTAACACCAATAGACACTACCATATGGCTAAAGAACGAGGTTCTGCGTTAGCCTG
TACATTGTGGTTATCTGTGATGGTAGTACCGATTCTGCTCCAAAAGACGCAAGTCGGAC
LysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyValArgValCys
6361 AGAAGGGGGTCGTAAAGCCAGCTCGTCTCATCGTGTCCCGATCTGGCGTGCCTG
TCTCCCCCAGCATTGGTCAGCAGAGTAGCACAAGGGGCTAGACCCGACCGCACA
GluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSer
6421 GCGAAAAGATGGCTTGTACGACGTGGTACAAAGCTCCCTGGCCGTATGGGAAGCT
CGCTTTCTACCGAAACATGTCGACCAATGTTCGAGGGAAACCGGACTACCCCTCGA
TyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSer
6481 CCTACGGATTCCAATACTCACCAGGACAGCGGGTTGAATTCTCGTGCAGCGTGGAAAGT
GGATGCCTAAGGTTATGAGTGGCTCTGCGCCAACTTAAGGAGCACGTTCGCACCTTC
LysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGlu
6541 CCAAGAAAACCCCAATGGGTTCTCGTATGATACCCGCTGCTTGAATCCACAGTC
GGTCTTTGGGTTACCCAAGAGCATACTATGGCGACGAAACTGAGGTGTCAGTGAC
SerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArg
6601 AGAGCGACATCCGTACGGAGGAGGCAATCTACCAATGTTGACCTCGACCCCCAAGCCC
TCTCGCIGTAGGCATGCCCTCCGTTAGATGGTACAACACTGGAGCTGGGGTTCGGG
ValAlaIleLysSerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArg
6661 GCGTGGCCATCAAGCCTCACCGAGAGGTTTATGTTGGGGGCCCTTACCAATTCAA
CGCACCCGGTAGTTAGGGAGTGGCTCTCGAAATACAACCCCGGGAGAATGGTTAAGTT
GlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGly
6721 GGGGGGAGAACTGCGGCTATCGCAGGTGCCGCAGCGCGTACTGACAAGCTG
CCCCCCTCTGACGCCGATAGCGTCCACGGCGCGTCGCCGATGACTGTTGACAC
AsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAsp
6781 GTAACACCTCACTTGCTACATCAAGGCCCCGGCAGCCTGTCGAGCCGCAGGGCTCC
CATTGTGGGAGTGAACGATGTAGTTCCGGGCCGTCGGACAGCTCGCGTCCGAGGTCC
CysThrMetLeuValCysGlyAspAspLeuValIleCysGluSerAlaGlyValGln
6841 ACTGCACCATGCTCGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCC
TGACGTGGTACGAGCACACACCGCTGCTGAATCAGCAATAGACACTTCGCGCCCCCAGG
GluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProPro
6901 AGGAGGAACGGCGAGCCTGAGAGCCTTCACGGAGGCTATGACCGAGTACTCC
TCCTCCTGCGCGCTCGGACTCTCGGAAGTGCCTCCGATACTGGTCATGAGGGGGGGGG
GlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnVal
6961 CTGGGGACCCCCCACACAGAAATACGACTGGAGCTCATACATGCTCCTCCAACG
GACCCCTGGGGGGTGTGGTCTTATGCTGAACCTCGAGTATTGAGTACGAGGAGGTTGC
SerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThr
7021 TGTCAGTCGCCACGACGGCGCTGGAAAGAGGGTCACTACCTCACCCGTGACCCCTACAA
ACAGTCAGCGGGTGCCTGCCGCACCTTCTCCAGATGATGGAGTGGGACTGGGATGTT

FIG. 47H

7081 ProLeuAlaArgAlaAlaTrpGluIleThrIleArgH1SerThrProValAsnSerTrpLeuGly
CCCCCTCGGAGAGCTGGCTGGAGACAGCACACTCCAGCTCAATTCCGGCTAG
GGGGGAGCGCTCTCGACGCCCTCTGICGTTCTGTGAGGTCAAGGACCGATC
7141 AsnIleIleMetPheAlaProThrLeuTrpAlaArgMetIleLeuMetThrIlePhe
GCAACATAATCATGTTGCCACACTGTTGGCGAGGATGATACTGATGACCCATTCT
CGTTGATTAGTACAACGGGGTGTGACACCCCGCTCCTACTATGACTACTGGTAAGA
7201 SerValLeuIleAlaArgAspGlnLeuIleGluGlnAlaLeuAspCysGluIleTyrGlyAla
TTAGCGCTCTATAGCCAGGAGCAGCTGAACAGGCCCTGATTGGAGATCTACGGGG
AATCGCAGGAATATCGGTCCTGGTCGAACCTGTCCGGGAGCTAACGCTCTAGATGCC
7261 CysTyrSerIleGluProLeuAspLeuProProIleIleGlnArgLeu
CCTGCTACTCATGAAACACTGATCACTCCAACTCATCAAGAGCTC
GGACGATGAGGATCTGGTGAACTAGATGGGGGTTAGTAAGTTCTGAG



FIG. 48

ProSerProValValValValGlyThrAspArgSerGlyAlaProThrSerTrpGly
1 CTCAGCCCCGGGGGGGGAAACGACGGACAGGTGGGGCTACCTACAGCTGGG
GAGGGTGGGGCACCAACCCCTGCTGGCTGCCAGCCCCGGATGGATGTCGACCC
GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
61 GTGAAATGATACGGACGTCTCGTCCTAACAAATACCGCCACCGCTGGCAATTGGT
CACTTACTATGCCTGCAGAAGCAGGAATTGTTATGGTCCGGCGACCCGTTAACCA
GLYCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
121 TCGGTGTGACTGGATGAACTCAACTGGATTCAACCAAAGTGTGGCTCACACGCC
AGCCAACATGGACCTACTTGAGTTGACCTAACGCTTCACGCCCTCGGGAGGAACAC
IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
181 TCACTGGAGGGGGGGCAACAACACCCACTGCCCCACTGATGCTTCCGCAAGC
AGTAGCCTCCCCGGCGTTGTGTGGGACCTGACGGGGTACTAACGAAGGGCTCGTAG
AspAlaThrThrSerArgCysGlySerGlyProTrpLeuThrProArgCysLeuValAsp
241 CGGACGCCACATACTCTGGTGGGGCTCCCTGGCTCACACCCAGGTGGCCTGGTCC
GCCTGCGGGTGTATGAGAGCCACGCCAGGGAGGGAGGTGTGGGTCCACGGGACCGC

TyrProTyraGleuTrpHistYrProCysThrIleAsnTyrThrIlePhelysIleArg
301 ACTACCCGTATAGGCTTGGCATTATCCTTGTCACCATCAACTACACCAATTAAATCA
TGATGGGCATATCCGAACCGTAATAGGAACATGGTAGTTGATGTGGTATAATTAGT

MetThrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
361 GGATGTACGTGGGGAGGGTCTGAGCACAGGCTGGAAAGCTGCCAACCTGGACGCCGG
CCTACATGCACCCCTCCCAGCTCGTGTCCGACCTCGACGGACGGTGTGACCTGGCCCCGC
-----Overlap with 12f-----
ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuThrThrThr
421 AACGTTGGATCTGGAAGACAGGGACAGGGTCCGAGCTCAGCCGTTACTGCTGACCACTA
TTGCAACGCTAGACCTCTGTCCCTGTCCAGGCTCGAGTGGGCAATGACGACTGGTGT

GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeu
481 CACAGTGGCAGGTCTCCCGTGTTCACAACCTGCCAGGCCCTGTCACCCGGCTCA
GIGTCACCGTCCAGGAGGGCACAGGAAGTGTGGACGGTGGGAAACAGGTGGGGAGT



FIG. 49

LeuPheTyrHisLysPheAsnSerSerGlyCysProGluArgLeuAlaSerCysArg
1 GCTTTCTATCACCAACAAAGTCAACTCTCAGGCTGTGAGAGCTCCGATCGGCTGCCG
CGAAAAGATAGTGGTGTCAAGTTGAGAAGTCCGACAGGACTCTCCGATCGGCTGCCG
ProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyrAlaAsnGlySerGlyPro
61 ACCCCTACCGATTGACCCAGGGCTGGGGCCTATCAGTTATGCCAACGGAAAGGGCC
TGGGAATGGCTAAACTGGTCCCAGCCCCGGATAGTCAATACGGTTGCCCTCGCCGGG
AspGlnArgProTyrcySProTyrcySProTyrcySProTyrcySProTyrcyS
121 CGACCCAGGCCCTACTGCACTACCCCCAAACCTGGGTATGTGCCGGAA
GCTGGTGGGGGATGACGACCGTGATGGGGTTTGGAACGCCATAACACGGCGCTT
---Overlap with 13i---
SerValCysGlyProValTyrCysPheThrProSerProValVal
181 GAGTGTGTGGTCCGGTATAATGCTTCACCCAGCCCCGGTGGTGGG
CTCACACACACCAGGCCATAACGAAGTGAGGGTGGGGCACCAACCC



FIG. 50

LeuValMetAlaGlnLeuLeuargIleProGlnAlaIleLeuAspMetIleAlaGlyAla
1 TTGGTAATGGCTCAGCTGCCATCCACAAGCCATCTGGACATGATCGCTGGTGCT
AACCATTACCGAGTCGACGGCTAGGGTGTGGTAGAACCTGGTACTAGCGACCACGA
HistrpglyValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrpAlaLysVal
61 CACTGGGGAGTCCTGGCGGCCATAGCGTATTCTCCATGGTGGGGAACTGGCGGAAGGTC
GTGACCCCTCAGGCCGCCGTATCGCATAAAGGGTACCCACCCCTTGACCCGCTTCCAG
LeuValValLeuLeuPheAlaGlyValAspAlaGluThrRhiValThrGlyGlySer
121 CTGGTAGTGCCTGCTATTGCCGGCTCGACGGGAACCCACGTACCGGGGAAGT
GACCATCACGACGACGATAACGGCCGAGCTGGCCTTGGTGCAGTGGCCCTTCA
AlaGlyHistrValSerGlyPheValSerLeuAlaProGlyAlaLysGlnAsnVal
181 GCCGGCACACTGGTGTGGATTGGTAGCCTCGCACCGGCCAGCAGAACGTC
CGGCCGGTGTGACACAGACACTAAACAATGGAGGGGCCGTTGGTCTGAGTCAG
GlnLeuIleAsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAsp
241 CAGCTGATCAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACTGCAATGAT
GTCGACTAGTTGGTGGCTCAACCGTGGAGTTATCGTGCCGGACTTGACGGTACTA
SerLeuAsnThrGlyTrpLeuAlaGlyLeuPheTrpHisIleAsnSerSerGly
301 AGCCTCAACACCGGCTGGTGGAGGGCTTCTATCACCAAGTCAACTCTCAGGC
TCGGAGTTGGCCGACCAACCGTCCCGAAAGATACTGGTGTCAAGTTGAGAAGTCCG
-----Overlap with 26j-----

-----Overlap with K9-1-----

CysProGluArgLeuAlaSerCysArgPro
361 TGTCTGAGAGGGCTAGCCAGCTGCCGACCC
ACAGGACTCTCCGATCGGTCGACGGCTGGG

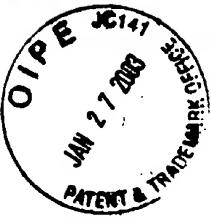




FIG. 51

GlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArgMetAlaIleTrpAsp
1CCGAAGGTTGCCATTGGCTCTATCTATCCCCCCATATAACGGGTCAACGGCATGGCATGGG
GCGTCCAAACGTTAACGAGATAGATAGGGCCGGTATATTGCCCAAGTGGGTACCGTACCC

MetMetAsnTrpSerProThrThrAlaLeuValMetAlaGlnLeuLeuArgIlePro
61 ATATGATGATGAACTGGTCCCCCTACGACGGCGTTGGTAATGGCTCAGCTGCTCCGGATCC
TATACTACTGACCAAGGGATGCTGCCGCAACCATTACCGAGTCGACGAGGCGCTAGG

GlnAlaIleLeuAspMetIleAlaGlyAlaIleIleAspMetIleAlaGlyIleAlaTyr
121 CACAAGGCCATCTGGACATGATGCTGGCTACTGGGAGTCTGGGGCATAGGGT
GTGGTGGTAGAACCTGTACTAGGACCGACCGAGTGAACCCCTCAGGACGGCCGTATGGCA

Overlap with CA59a-----
PheSerMetValGlyAsnTrpAlaLysValLeuValValleLeuPheAlaGlyVal
181 ATTCTCCATGGTGGGAAACTGGCGAAGGTCCCTGGTAGTGCTGCTGCTATTGGGGCG
TAAAGAGGTACCAACCCCTTGACCCGCTTCCAGGACCATCACGACGATAAACGGCCGC

AspAlaGluThrHisValThrGly
241 TCGACGGGAAACCCACGTCACGGGG
AGCTGGCCCTTGGGTGCAAGTGGCCC

FIG. 52

CystrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThrGln
1 GTGTTGGGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCCCCGGACGCA
CACAAACCACCGCTACTGGGGATGCCACCGGGTGGTCCCTACCGTTGGGGCGCTGCGT

LeuArgArgGlyIleAspLeuValGlySerAlaThrLeuCysSerAlaLeuThrVal
61 GCTTCGACGTCACATCGATCTTGCTTGTGGGAGGCCACCCCTCTGTTGGCCCTCTACGT
CGAAGCTGCAGTGTAGCTAGACGAAACAGCCCCCTCGCGGGAGACAAGCGGGAGATGCA

GlyAspLeuCysGlySerValPheLeuValGlyGlnLeuPheThrPheSerProArgArg
121 GGGGACCTATGGGGTCTGTTCTGTGGCAACTGTTCACCTCTCTCCAGGGCG
CCCCCTGGATACGCCAGACAGAAACAGCCGGTGGACAAGTGGAGAGAGGGTCCGC

HistrpThrThrGlnGlyCysAsnCysSerIleThrProGlyHisIleThrGlyHisArg
181 CCACTGGACGACGCCAAGGTTGCAATGCTCTATCTATCCGGCCATATAACGGGTCAACCG
GGTGACCTGCTGCGTTCCAACGTTAACGAGATAGATAGGGCCGGTATATTGCCAGTGGC

-----Overlap with C84a-----
MetAlaThrPaspMetMetAsnTrpSerProThrThrAlaLeuValValAlaGlnLeu
241 CATGGCATGGATATGATGATGAACGGTCCCTACGACGGGTTGGTAGTGGCTCAGCT
GTACCGTACCCATACTACTACTTGACCAAGGGGATGCTGCCGCAACCATCACCGAGTCGA

LeuArgGlyIleProGlnAla

301 GCTCCGGATCCCACAAAGCC
CGAGGCCTAGGGTCTCGG



FIG. 53

SerThrGlyLeuThrHisValThrAsnAspCysProAsnSerSerIleValTyrgluAla
1 CCTCCACGGGGCTTACCACTACGTCACCAATGATTGCCCTAACTCGAGTATGGTACGGGC
GAGGTCCCCGAATGGTGCAGTGGTTACTAACGGGATTGAGCTCATACACATGCCTCCG

AlaAspAlaLeuHisThrProGlyCysValProCysValArgGluGlyAsnAlaSer
61 GGCCGATGCCATCCTGCACACTCGGGGTCGTCCTGCGTTCTGAGGGCAACGCC
CCGGCTACGGTAGGTGAGGCGTGGAGCAGCTCCGGTGGAG

ArgCysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThr
121 GAGGTGTTGGCTGGCGATGACCCCTACGGTGGCCACCCAGGGATGGCAAACCTCCCGCGAC
CTCCACAACCCACCGCTACTGGGATGCCACCGGTGGTCCCTACCGTTGAGGGCGCTG

-----Overlap with CA156e-----

GlnLeuArgArgHisIleAspLeuValGlySerAlaThrLeuCysSerAlaLeuTy
181 GCAGCTTCGACGTCACATCGATCTGCTGGGAGCGCTACCCCTCTGTCGGCCCTCTA
CGTCCGAAGCTGCAGTGTAGCTAGACGAAACAGCCCTCGCGATGGGAGACAAGCGGGAGAT

ValGlyAspLeuCysGlySerValPheLeu
241 CGTGGGGGACTTGTGCGGGTCTGTCTTCTTG
GCACCCCTGAACACGCCAGACAGAAAGAAC





FIG. 54A

1 ArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGlyPheAlaAspLeuMet
1 AGGTGCGCAATTGGTAAGGTATCGATACCTTACGTGCGGCTCGCCGACCTCATG
TCCAGCGCTTAAACCCATTCCAGTAGCTATGGGAATGCACGCCAAGCGGCTGGAGTAC
GlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAlaHisGly
61 GGGTACATACCGCTCGCGCCCTCTGGAGGCCTGCAGGGCCCTGGCGCATGGC
CCCATGTATGGCGAGCAGCCGCGGGAGAACCTCCGCGACGGTCCCGGACCGCGTACCG
ValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPhe
121 GTCCGGTTCTGAAAGACGGCGTGAACTATGCAACAGGGAACCTCTGGTTGCTCTTC
CAGGCCAAGACCTCTGCCGACTTGATACTGTTGCCCCTGGAGGACCAACGAGAAAG
SerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValProAlaSerAlaTyrGlnVal
181 TCTATCTCTCTGGCCCTGCTCTTGACTGTGCCGCTCGCCCTACCAAGTG
AGATAGAAGGAAGACCGGGACGAGAGAACGAACTGACACGGCGAAGCGGATGGTTCAC
ArgAsnSerThrGlyLeuTyrHisValThrAsnAspCysProAsnSerSerIleValTyr
241 CGCAACTCCACGGGGCTTACCAACGTACCAATGATTGCCCTAACTCGAGTATTGTGTAC
GCGTTGAGGTGCCCGAAATGGTGCAGTGGTTACTAACGGGATTGAGCTCATAACACATG
GluAlaAlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGluGlyAsn
301 GAGGCGGCCATGCCATCCTGCACACTCCGGGTGCGTCCCTGCGTTCGTGAGGGCAAC
CTCCGCCGGCTACGGTAGGACGTGTGAGGCCCCACGCAGGGAACGCAAGCACTCCGTTG
AlaSerArgCysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuPro
361 GCCTGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAAGGGATGGCAAACCTCCC
CGGAGCTCCACAACCCACCGTACTGGGATGCCACCGGTGGCCCTACCGTTGAGGGGG
AlaThrGlnLeuArgArgHisIleAspLeuLeuValGlySerAlaThrLeuCysSerAla
421 GCGACGCAGCTCGACGTACATCGATCTGCTTGTGGAGCGCCACCCCTGTGTTGGCC
CGCTGCGTCGAAGCTGCAAGTGTAGCTAGACGAACAGCCCTCGGGTGGAGACAAGCCGG
LeuTyrValGlyAspLeuCysGlySerValPheLeuValGlyGlnLeuPheThrPheSer
481 CTCTACGTGGGGGACCTATGCGGTCTGTCTTCTGCGGCCACTGTTCACCTCTCT
GAGATGCACCCCCCTGGATACGCCAGACAGAAAGAACAGCCGGTTGACAAGTGGAAAGAGA
ProArgArgHisTrpThrThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThr
541 CCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGCCATATAACG
GGGTCCCGGGTGACCTGCTCCGTTCAACGTTAACGAGATAGATAGGGCCGGTATATTGC
GlyHisArgMetAlaTrpAspMetMetAsnTrpSerProThrThrAlaLeuValMet
601 GGTACCCGATGGCATGGGATATGATGATGAACTGGTCCCTACGACGGCGTTGGTAATG
CCAGTGGCGTACCGTACCCCTATACTACTACTTGACCAGGGGATGCTGCCCAACCATTAC

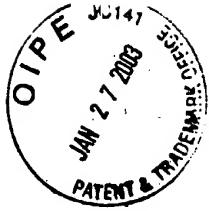


FIG. 54B

AlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGly
 661 GCTCAGCTGCTCCGGATCCCACAAAGCCATCTGGACATGATCGCTGGTGCTACTGGGGA
 CGAGTCGACGAGGCCTAGGGTGTTCGGTAGAACCTGTACTAGCGACCACGAGTGACCCCT

 ValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrpAlaLysValLeuValVal
 721 GTCCCTGGCGGGCATAGCTATTCTCATGGTGGGGAACTGGGCAAGGTCTGGTAGTG
 CAGGACGCCCGTATCGATAAAGAGGTACCACCCCTGACCCGCTTCAGGACCATCAC

 LeuLeuLeuPheAlaGlyValAspAlaGluThrH1sValThrGlyGlySerAlaGlyHis
 781 CTGCTGCTATTGCCGGCGTCAGCGGGAAACCCACGTCACCGGGGAAAGTGCAGGCGCAC
 GACGACGATAAACGGCCGCAGCTGCCTTGGTAGTGGCCCCCTCACGGCCGGTG

 ThrValSerGlyPheValSerLeuLeuAlaProGlyAlaLysGlnAsnValGlnLeuIle
 841 ACTGTGTCTGGATTGTTAGCTCCTCGCACCCAGGCGCAAGCAGAACGTCCAGCTGATC
 TGACACAGACCTAACAACTGGAGGAGCGTGGTCCGGGGTTCTGACGGTCACTAG

 AsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsn
 901 AACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACGTGCAATGATAGCTCAAC
 TTGTGGTTGCCGTCACCGTGGAGTTATCGTGGCCGGACTTGACGTTACTATGGAGTTG

 ThrGlyTrpLeuAlaGlyLeuPheTyrH1sHisLysPheAsnSerSerGlyCysProGlu
 961 ACCGGCTGGTTGGCAGGGCTTTCTACACCAAGTCAACTCTTCAGGCTGTCCCTGAG
 TGGCCGACCAACCGTCCCAGAAAGATACTGGTGTTCAGTTGAGAAGTCCGACAGGACTC

 ArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyr
 1021 AGGCTAGCCAGCTGCCAACCCCTAACGATTTGACCAAGGGCTGGGCCCTATCAGTTAT
 TCCGATCGGTCGACGGCTGGGAATGGCTAAAACGGTCCCAGCCGGATAGTCATA

 AlaAsnGlySerGlyProAspGlnArgProTyrCysTrpH1sTyrProProLysProCys
 1081 GCCAACCGGAAGCGGGCCCGACCAAGCGCCCTACTGCTGGCACTACCCCCAAAACCTGC
 CGGTTGCCCTCGCCGGGCTGGTCGCGGGGATGACGACCGTGAATGGGGGTTTGGAACG

 GlyIleValProAlaLysSerValCysGlyProValTyrCysPheThrProSerProVal
 1141 GGTATTGTGCCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCCAGCCCCGTG
 CCATAAACACGGGCGCTCTCACACACACCAGGCCATAAACGAAGTGAAGGGTGGGGCAC

 ValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGlyGluAsnAspThr
 1201 GTGGTGGGAACGACCGACAGGTGGCGGCCACCTACAGCTGGGTGAAATGATACTG
 CACCAACCTTGCTGGCTGTCCAGCCCGCGCGGGTGGATGTCGACCCCACCTTTACTATGC

 AspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPheGlyCysThrTrp
 1261 GACGTCTTCGCTTAACAATACCAAGGCCACCGCTGGCAATTGGTCGGTTGTACCTGG
 CTGCAAGAAGCAGGAATTGTTATGGTCCGGTGGCAGCCGTTAACCAAGCCAACATGGACC

 MetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysValIleGlyGlyAla
 1321 ATGAACACTGGAATTCAACAAAGTGTGCGGAGCGCCTCTGTGTCATCGGAGGGCG
 TACTTGAGTTGACCTAACAGTGGTTCACACGCCCTCGCGGAGGAACACAGTAGCCTCCCCGC

 GlyAsnAsnThrLeuH1sCysProThrAspCysPheArgLysHisProAspAlaThrTyr
 1381 GGCACACACACCCCTGCACTGCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATAC
 CCGTTGGTGGACGTGACGGGTGACTAACGAAGGCGTTGTAAGCCTGCGGTGTATG

 SerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAspTyrProTyrArg
 1441 TCTCGGTGGCTCCGGTCCCTGGATCACACCCAGGTGGCTGGTCAGTACCCGTATAGG
 AGAGCCACGCCAGGGCAGGGACCTAGTGGTCCACGGGACAGCTGATGGCATGGCATTAC

 LeuTrpH1sTyrProCysThrIleAsnTyrThrIlePheLysIleArgMetTyrValGly
 1501 CTTGGCATTATCCTGTACCATCAACTACACCATATTTAAATCAGGATGTACGGGGAA
 GAAACCGTAATAGGAACATGGTAGTTGATGTTGATAAATTAGTCCTACATGCACCCCT

 GlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeu
 1561 GGGGTGAAACACAGGCTGGAGGCTGCCTGCAACTGGACGCCGGGCGAACGTTGCGATCTG
 CCCCAGCTTGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGCTTGCAACGCTAGAC

 GluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrH1sTrpGlnVal
 1621 GAAGACAGGGACAGGTCGAGCTCAGCCGTTACTGCTGACCAACTACACAGTGGCAGGTC
 CCTCTGTCCCTGTCCAGGCTCGAGTCGGCAATGACGACTGGTAGTGTGTCACCGTCCAG

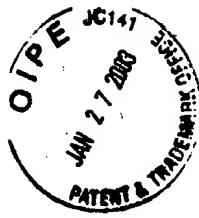


FIG. 54C

LeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIleHisLeuHisGln
 1681 CTCGGTGTCTTCACAACCCCTACCAAGCCTTGTCCACCGGCCTCATCCACCTCCACCAAG
 GAGGGCACAAGGAAGTGGTGGGATGGTCGGAACAGGTGGCCGAGTAGGTGGAGGTGGTC

 AsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAlaSerTrpAlaIle
 1741 AACATTGTGGACGTGCAGTACTTGACGGGTGGGGTCAAGCATCGCGTCTGGGCCATT
 TTGTAACACCTGCACGTCACTGAACATGCCACCCAGTTCGTAGCGCAGGACCCGGTAA

 LysTrpGluTyrValValLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCys
 1801 AAGTGGGAGTACGTCCTCTCCTGTTCTGCTTCAGACGCGCGCTGTGCTCTGC
 TTCACCCATGCAGCAAGAGGACAAGGAACGAGCAGACGTCTGCGCGCAGACGAGGACG

 LeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeu
 1861 TTGTGGATGATGCTACTCATATCCAACGGGAGGGCGCTTGGAGAACCTCGTAATACTT
 AACACCTACTACGATGAGTATAGGGTCGCCCTCCGCCAAACCTTGGAGCATTATGAA

 AsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPhe
 1921 AATGCAGCATCCCTGGCCGGACGACGGCTTGTATCCTCTCGTGTCTCTGCTTT
 TTACGTCGTAGGGACCGGCCCTGCGTCCAGAACATAGGAAGGAGCACAAGAACGAAA

 AlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrp
 1981 GCATGGTATTGAGGGTAAGTGGGTGCCCGGAGCGCTACACCTCTACGGGATGTGG
 CGTACCATAAACTCCCATCACCACGGGCTCGCCAGATGTTGGAAAGATGCCCTACACC

 ProLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluVal
 2041 CCTCTCTCTGCTCCTGTTGGCGTTGCCAGCGGGCTACCGCTGGACACGGAGGTG
 GGAGAGGAGGACGAGGACAACCGCAACGGGTCGCCGCATGCGGACCTGTGCCTCCAC

 AlaAlaSerCysGlyValValLeuValLeuMetAlaLeuThrLeuSerProTyr
 2101 GCCGCCTGCGTGTGGCGGTGTTCTCGTCGGTTGATGGCGCTGACTCTGTCACCATAT
 CGCGCAGCACCCGCAACAAGAGCAGCCAACTACCGCAGTGGACAGACTGGTATA

 TyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGlu
 2161 TACAAGCGCTATATCAGCTGGTGTGGTGGCTTCAGTATTTCTGACCAAGAGTGGAA
 ATGTTCGCGATAGTCGACCACGAACACCACCGAAGTCATAAAAGACTGGTCTCACCTT

 AlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIle
 2221 GCGCAACTGCACTGTTGGATTCCCCCCTAACGTCGAGGGGGCGACGCCGTATC
 CGCGTTGACGTGCACACCTAACGGGGAGTTGCAAGGCTCCCCCGCGCTGCCAGTAG

 LeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuAla
 2281 TTACTCATGTTGCTGTACACCCGACTCTGGTATTTGACATACCAAATTGCTGGCC
 AATGAGTACACACGACATGTTGGCTGAGACCATAAAACTGTAGTGGTTAACGACGACCGG

 ValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArg
 2341 GTCTCGGACCCCTTGGATTCTCAAGCCAGTTGCTTAAAGTACCTACTTGTGCGC
 CAGAACGCTGGGGAAACCTAACGAAGATTGGTCAAACGAATTGATGGATGAAACACGCG

 ValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrVal
 2401 GTCCAAGGCCCTCTCGGTTGCGCGTTAGCGCGAACGATGTCGGAGGCCATTACGTG
 CAGGTTCCGGAAGAGGCCAACGCGCAATCGGCCCTACTAGCCTCCGGTAATGCAC

 GlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThr
 2461 CAATGGTCATCAATTAAAGTTGGGGCGCTTACTGGCACCTATGTTATAACCACACT
 GTTACCACTAGTAATTCAATCCCCCGCAATGACCGTGGATACAAATATTGGTAGAGTGA

 ProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProVal
 2521 CCTCTCGGACTGGCGCACACCGCTTGCAGATCTGGCCGGCTGTAGAGCCAGTC
 GGAGAACGCCCTGACCCCGCTGTTGCCAACGCTAGACCGGACCGACATCTGGTCAG

 ValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGly
 2581 GTCTCTCCCAATGGAGACCAAGCTCATCAGTGGGGGGCAGATAACCGCCGCGTGG
 CAGAACGGGTTACCTCTGGTTGAGTAGTGACCCCCCGTATGGCGGCGACGCCA

 AspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyPro
 2641 GACATCATCAACGGCTTGCTGTTCCGCCCGAGGGGCCGGAGATACTGCTGGGCC
 CTGAGTAGTTGCCAACGGACAAAGGCCGCGTCCCCGGCCCTATGGCGGCGACGCCA



FIG. 54D

2701 AlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGln
GCCGATGGAATGGCTCCAAGGGGTGGAGGTTGCTGGCGCCATCACGGCGTACGCCAG
CGGCTACCTTACCAAGAGGTTCCCACCTCCAACGACCGCGGGTAGTGCCGCATGCCAG
GlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGln
2761 CAGACAAGGGGCCTCCTAGGGTGCATAATCACCAAGCTAACTGGCCGGACAAAAACCAA
GTCTGTTCCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACCGGGCCCTGTTGGT
ValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIle
2821 GTGGAGGGTGAGGTCCAGATTGTGCAACTGCTGCCAACCTTCTGGCAACGTGCATC
CACCTCCCCTCCAGGTCTAACACAGTTGACGACGGGTTGGAAAGGACCGTTGCACGTAG
AsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLys
2881 AATGGGGTGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTACCCAAG
TTACCCCCACACGACCTGACAGATGGTCCCCGGCTTGCTCTGGTAGCGCAGTGGGTT
GlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaPro
2941 GGTCTGTATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGCTGGCCGCTCCG
CCAGGACAGTAGGTCTACATATGGTTACATCTGGTCTGGAAACACCGACGGCGAGG
GlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThr
3001 CAAGGTAGCCGCTATTGACACCCCTGCACTTGCCTCGACCTTACCTGGTCACG
GTTCCATCGCGAGTAACGTGGGACGTGACGCCGAGGAGCCTGAAATGGACAGTGC
ArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSer
3061 AGGCACGCCGATGTCATTCCCGTGCGCCGGCGGGGTGATAGCAGGGCAGCCTGCTGTCG
TCCGTGCGGCTACAGTAAGGGCACGCCGCCCCACTATCGTCCCCGTCGGACGACAGC
ProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGly
3121 CCCCCGCCATTCTACTTGAAGGCTCTCGGGGGTCCGCTGTTGTGCCCGCAGGGGG
GGGGCCGGGTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCACAAACACGGGGCGCCCC
HisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAsp
3181 CACGCCGTGGGCATATTAGGGCCGCGGTGTGACCCGTGGAGTGGCTAAGGCGGTGGAC
GTGCGGCACCGTATAATCCGGGCCACACGTGGGACCTCACCGATTCCGCCACCTG
PheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSer
3241 TTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTACGGATAACTCC
AAATAGGGACACCTCTTGGATCTGTGGTACTCCAGGGGCCACAAGTGCCTATTGAGG
SerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySer
3301 TCTCCACCAAGTAGTGCCCCAGAGCTCCAGGTGGCTCACCTCATGCTCCACAGGCAGC
AGAGGTGGTCATCACGGGTCTGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTCG
GlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeu
3361 GGCAAAAGCACCAAGGTCCCAGGTGCAATGCAGCTCAGGGCTATAAGGTGCTAGTACTC
CCGTTTCTGTGGTCCAGGGCCACGTACGTCAGTCCGATATTCCACGATCATGAG
AsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIle
3421 AACCCCTCTGTGCAACACTGGGCTTGGCTACATGTCACAGGCTCATGGGATC
TTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCC
AspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSer
3481 GATCCTAACATCAGGACCGGGGTGAGAACAAATTACCAACTGGCAGCCCCATACGTACTCC
CTAGGATTGTAGTCTGGCCCCACTCTGTTAATGGTGACCGTCGGGGTAGTGCATGAGG
ThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIle
3541 ACCTACGGCAAGTTCTTGCCGACGGCGGGTGCCTGGGGGGCGTTATGACATAATAATT
TGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAATACTGTATTATTAA
CysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAsp
3601 TGTGACGAGTGCCACTCCACGGATGCCACATCCATCTGGCATCGGCACTGTCTTGAC
ACACTGCTCACGGTGAGGTGCCTACGGTGAGGTAGAACCCGTAGCCGTGACAGGAAC



FIG. 54E

3661 GlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySer
CAAGCAGAGACTGCAGGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTCC
GTTCGTCTGACGCCCGCTGACCAACAGAGCGGIGGGCGTGGGAGGCCGAGG
3721 ValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIlePro
GTCACTGTCCCCATCCAAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCCT
CAGTGACACGGGGTAGGGTTGAGCTCTCCAAACGAGACAGGGTGGTGGCCTCTAGGG
3781 PheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCys
TTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTCTGT
AAAATGCCGTTCCGATAGGGGAGCTCATTAGTTCCCCCTCTGTAGAGTAGAACACA
3841 HisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAla
CATTCAAAGAAGAAGTGCAGCGAACACTGCCGAAAGCTGGTGCATGGGCATCAATGCC
GTAAGTTCTTCTTCACGCTGCTTGAACGGCGTTGACCGCTAACCGTAGTTACCG
3901 ValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValVal
GTGGCCTACTACCGCGGTCTTGACGTGTCGTCATCCGACCAGCGCGATGTTGTCGTC
CACCGGATGATGGCGCCAGAACACTGCACAGGAGTAGGGCTGGTGCCTACAAACAGCAG
3961 ValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCys
GTGGCAACCGATGCCCTCATGACCGGCTATACCGCGACTTCGACTCGGTGATAGACTGC
CACCGTTGGCTACGGGAGTACTGGCGATATGGCGCTGAAGCTGAGCCACTATCTGACG
4021 AsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThr
AATACGTGTCACCCCAGACAGTCGATTTCAGCCTTGACCTTACCTCACCATTGAGACA
TTATGCAACACAGTGGGTCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGGTAACCTGT
4081 IleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGly
ATCACGCTCCCCCAGGATGCTGTCTCCGCACCAACGTCGGGGCAGGACTGGCAGGGGG
TAGTGCAGGGGGGTCCTACGACAGAGGGCGTAGTTGACGCCCCGTCTGACCGTCCCC
4141 LysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSer
AAGCCAGGCATCTACAGATTGTGGCACCGGGGAGCGCCCTCCGGCATGTTGACTCG
TTGGTCCGTAGATGTCATAACACCGTGGCCCCCTCGCGGGAGGCGTACAAGCTGAGC
4201 SerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGlu
TCCGTCTCTGTGAGTGTCTATGACGCAGGCTGTGCTTGGTATGAGCTACGCCGCGAG
AGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCAGGGCG
4261 ThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHis
ACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGTCCCGTGTGCCAGGACCAT
TGATGTCATCCGATGTCGTCATGTTGAGTGTGAGCTGGGGCCCCGAAGGGCACACGG
4321 LeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSer
CTTGAATTGGGAGGGCGTCTTACAGGCCTCACTCATAGATGCCACTTTCTATCC
GAACTAAAACCTCCCGAGAAATGTCGGAGTGAAGTATCTACGGGTGAAAGATAGG
4381 GlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCys
CAGACAAAGCAGAGTGGGGAGAACCTCCTACCTGGTAGCGTACCAAGCCACCGTGTGC
GTCTGTTCGTCTACCCCTTGGAGGAATGGACCATCGCATGGTGGCAGACACG
4441 AlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeu
GCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACAGATGTTGAAAGTGTGATTGCC
CGATCCCGAGTTGGGGAGGGGGTAGCACCCTGGTACACCTTACAAACTAACGGGAG
4501 LysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGlu
AAGCCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGCGCTGTTCAAGAATGAA
TTCGGGTGGAGGTACCGGTTGGGGACGATATGTCGACCCGCGACAAGTCTTACTT
4561 IleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGlu
ATCACCCCTGACGCACCCAGTCACCAAATACATCATGACATGTCATGTCGGCCGACCTGGAG
TAGTGGGACTGCGTGGGTCACTGGTTATGTAAGTACTGTACGTA
4621 ValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCys
GTCGTACGAGCACCTGGGTGCTCGTGGCGGGCTGGCTGCTTGGCCGCGTATTG
CAGCAGTGCTCGTGGACCCACGAGCAACGCCGAGGACCGACGAAACCGGCGATAACG



FIG. 54F

4681 LeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIle
 CTGTCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTGTCCGGAAAGCCGGCAATC
 GACAGTTGTCGACGCCAGTATCACCGTCCAGCAGAACAGGCCCTCGGCCGTTAG

 4741 IleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHis
 ATACCTGACAGGGAAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCCTCAGCAC
 TATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCACCTCTCACGAGAGTCGTG

 4801 LeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGly
 TTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAACGGCCCTCGGC
 AATGGCATGTAGCTGTTCCCTACTACGAGCGCTCGTCAAGTCGTTCCGGAGCCG

 4861 LeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAspTrp
 CTCCGTGACGCCGCTCCCGTCAGGCAGAGGTTATCGCCCCCTGCTGCCAGACCAACTGG
 GAGGACGCTGGCGCAGGGCAGTCGTCCAAATAGCGGGGACGACAGGTCTGGTTGACC

 4921 GlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyr
 CAAAAACTCGAGACCTCTGGCGAAGCATAATGTTGAACTTCATCAGTGGGATAAACATAC
 GTTTTGAGCTCTGGAGACCCGCTTCGTATAACACCTGAAGTAGTCACCCTATGTTATG

 4981 LeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThr
 TTGGCGGGCTTGTCAACGCTGCCCTGGTAACCCGCCATTGCTTCATTGATGGCTTTACA
 AACCGCCGAACAGTTCGACGGACCATGGGGCGTAACGAAGTAACCGAAAATGT

 5041 AlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGly
 GCTGCTGTCACCAGCCCACTAACCACTAGCCAAACCCCTCTCAACATATTGGGGGG
 CGACGACAGTGGTCGGTGATTGGTGATCGGTTGGGAGGAAGTTGATAACCCCCCCC

 5101 TrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeu
 TGGGTGGCTGCCAGCTGCCGCCGGTGCCTACTGCCCTTGCGCTGGCGCTGGCTTA
 ACCCACCGACGGGTCGAGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAAT

 5161 AlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGly
 GCTGGCGCCGCCATGGCAGTGTGGACTGGGGAAAGTCCTCATAGACATCCTTGAGGG
 CGACCGCGGGTAGCCGTACAACCTGACCCCTCCAGGAGTATCTTAGGAACGTCCC

 5221 TyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValPro
 TATGGCGCGGGCGTGGCGGGAGCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCC
 ATACCGCCCGCACCGCCCTCGAGAACACCCGTAAGTTCTAGTACTCGCCACTCCAGGG

 5281 SerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValVal
 TCCACGGAGGACCTGGCAATCTACTGCCGCATCCTCTGCCGGAGCCCTCGTAGTC
 AGGTGCCTCTGGACCACTTAGATGACGGGGCGTAGGAGAGCGGGCCTGGAGCATCAG

 5341 GlyValValCysAlaAlaIleLeuArgARgHisValGlyProGlyGluGlyAlaValGln
 GGCCTGGCTGTGCAGCAATACTGCCGCCGGCACGTTGGCCGGAGGGGGCAGTGCAG
 CGCACAGACACGTGTTATGACCGGGCGTGCACCGGGCCGCTCCCCGTACGTC

 5401 TrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyr
 TGATGAACCGGCTGATAGCCTGCCCTCCGGGGAACCATGTTCCCCACGCACTAC
 ACCTACTTGGCGACTATCGGAAGCGGGAGGGCCCCCTTGGTACAAAGGGGTGCGTGATG

 5461 ValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThr
 GTGCCGGAGAGCGATGCAGCTGCCCGCTACTGCCATACTCAGCAGCCTCACTGTAACC
 CACGGCCTCGCTACGTCGACGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGG

 5521 GlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGly
 CAGCTCTGAGGCAGACTGCACCACTGGATAAGCTGGAGTGTACCACTCCATGCTCCGGT
 GTCGAGGACTCGCTGACGTGGTACCTATTGAGCCTCACATGGTGAGGTACGAGGCCA

 5581 SerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrp
 TCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTAAAGACCTGG
 AGGACCGATTCCCTGTAGACCCCTGACCTATACTGCTCCACAACTCGCTGAAATTCTGGACC

 5641 LeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGly
 CTAAGCTAAGCTATGCCACAGCTGCCCTGGATCCCCTTGTGTCCTGCCAGCGCGGG
 GATTTTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTCGCGCCC



FIG. 54G

5701 TyrLysGlyValTrpArgValAspGlyIleMetHisThrArgCysHisCysGlyAlaGlu
ATATTCCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTGACTC

5761 IleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsn
TAGTGACCTGTACAGTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCCCTG

5821 MetTrpSerGlyThrPheProIleAsnAlaTyrThrGlyProCysThrProLeuPro
ATGTGGAGTGGGACCTCCCCATTAAATGCCACACCACGGGCCCTGACCCCCCTTCCT
TACACCTCACCCCTGGAAAGGGTAATTACGGATGTGGTGCCCGGGACATGGGGGAAGGA

5881 AlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArg
GCGCCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGG
CGCAGCTTGATGTGCAAGCGCATACTCCACAGACGTCTCCTTATACACCTCTATTCC

5941 GlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCys
CAGGTGGGGACTTCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTGC
GTCCACCCCCCTGAAGGTGATGCACTGCCACTGTGACTGTTAGAGTTACGGCACG

6001 GlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAla
CAGGTCCCCTCGCCCGAATTTCACAGAATTGGACGGGGTGCCTACATAGGTTGCG
GTCCAGGGTAGCGGGCTTAAAGTGTCTAACCTGCCACCGGGATGTATCAAACGC

6061 ProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyr
CCCCCTGCAAGCCCTTGCCTGGGAGGGAGGTATCATTCAAGAGTAGGACTCCACGAATAC
GGGGGGACGTTGGGAACGACGCCCTCCATAGTAAGTCTCATCTGAGGTGTTATG

6121 ProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMet
CCGGTAGGGTCGAATTACCTTGCGAGCCCACCGGAGCTGGCGTGTGACGTCCATG
GGCCATCCCAGCGTTAATGGAACGCTGGGCTTGGCCTGCACCGGACAACACTGCAGGTAC

6181 LeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySer
CTCACTGATCCCTCCCATATAACAGCAGAGGCGGGCGAGGTTGGCGAGGGGATCA
GAGTGAAGTGGAGGGTATATTGCGTCTCCGGCCCGCTTCAACCGCTCCCCTAGT

6241 ProProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThr
CCCCCTCTGTGGCCAGCTCTCGGCTAGCCAGCTATCCGCTCATCTCAAGGCAACT
GGGGGGAGACACCGGTCAGGGAGCCGATGGTCGATAGGCAGGTAGAGAGTTCCGTTGA

6301 CysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArg
TGCACCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCCAACCTCTATGGAGG
ACGTGGCGATTGGTACTGAGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCC

6361 GlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAsp
CAGGAGATGGCGGCAACATCACCAAGGGTTGAGTCAGAAAACAAAGTGGTGAATTCTGGAC
GTCCTCTACCCGCCGTTGAGTGGTCCAACTCAGCTTTGTTCAACCAACTAACCTG

6421 SerPheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIle
TCCTCGATCCGCTTGTGGCGAGGGAGGAGCAGCAGGAGATCTCCGTACCCGCAAGAAC
AGGAAGCTAGGCGAACACCGCCTCTGCTGCCCTCTAGAGGGCATGGCGTCTTAG

6481 LeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsn
CTGCGGAAGTCTGGAGATTGCCAGGCCCTGCCGTTGGCGCGCCGGACTATAAC
GACGCCCTCAGAGCCTAAGCGGGTCCGGGACGGCAAACCCCGGCCGGCTGATATTG

6541 ProProLeuValGluThrTrpLysProAspTyrGluProProValValHisGlyCys
CCCCCGCTAGTGGAGACGCTGGAAAAAGCCGACTACGAACCACCTGTGGTCCATGGCTGT
GGGGCGATCACCTCTGACCTTTGGGCTGATGCTTGGTGGACACCAAGGTACCGACAA

6601 ProLeuProProProLysSerProProValProProProArgLysLysArgThrValVal
CCGCTTCCACCTCCAAAGTCCCTCCTGTCCTCCGCTCGGAAGAAGCAGCAGGGTGGTC
GGCGAAGGTGGAGGTTCAAGGGAGGACACGGAGGCGAGCCTTCTGCCCTGCCACCAAG

6661 LeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySer
CTCACTGAATCAACCTATCTACTGCCTGGCGAGCTGCCACCAAGAAGCTTGGCAGC
GAGTGAAGTGGAGGATAGATGACGGAACCGGCTCGAGCAGGGTGGTCTCGAAACCGTCG

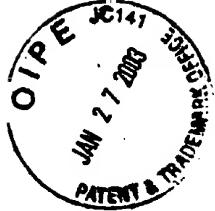


FIG. 54H

6721 SerSerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSer
 TCCTCAACTTCCGGCATTACGGGCAGAACATACGACAACATCTCTGAGCCGCCCTCT
 AGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTAGGAGACTCGGGCGGGGAAGA
 GlyCysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGlu
 GGCTGCCCCCCCCGACTCCGACGCTGAGTCCTATTCTCCATGCCCTGGAGGGGGAG
 CCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGACCTCCCCCTC
 ProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAla
 CCTGGGGATCCGGATCTTAGCGACGGGTATGGTCAACGGTCAGTAGTGAGGCAACGCG
 GGACCCCTAGGCCAGAATCGCTGCCAGTACCAAGTTGCCAGTCAGTCACTCCGGTGC
 GluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCys
 GAGGATGTCGTGCTGCTCAATGCTTACTCTGGACAGGGCACTCGTCACCCCGTGC
 CTCTACAGCACAGCACGAGTTACAGAATGAGAACCTGTCGCCGTGAGCAGTGGGGCAGC
 AlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHis
 GCGCGGAAGAACAGAAACTGCCATCAATGCACTAAGCAACTGTTGCTACGTAC
 CGGCCTTCTGTCTTGTGAGGTTACGTGATTGAGCAACGATGCACTGGT
 AsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPhe
 AATTGGTGTATTCCACCACTCACGAGTCTGGACAGCCATTACCAAGGAGTTAACGAGCG
 TTAAACACATAAGGTGGTGGAGTGCACGAAACGGTTCCGTCTTCAGTGTAAA
 AspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAla
 GACAGACTGCAAGTTCTGGACAGCCATTACCAAGGAGTACTCAAGGAGGTTAACGAGCG
 CTGTCAGTCAAGACCTGTCGGTAATGGTCTGCATGAGTTCTCCAATTTCGTC
 AlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrProPro
 GCGTCAAAAGTGAAGGCTAACTTGCTATCGTAGAGGAAGCTTGCGCCTGACGCC
 CGCAGTTTCACTTCCGATTGAAACGATAGGCATCTCCTCGAACGTCGGACTGC
 HisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLys
 CACTCAGCAAATCCAAGTTGGTATGGGGCAAAAGACGTCGGTGCCTGCAAG
 GTGAGTCGGTTAGGTCACCGATACCCCGTTCTGCAGGCAACGGTACGGT
 AlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIle
 GCCGTAACCCACATCAACTCCGTGTTGGAAAGACCTCTGGAAAGACAATGTA
 CGGCATTGGGTGAGTTGAGGCACACCTTCTGGAAAGACCTCTGTTACATTG
 AspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyArg
 GACACTACCACATGGCTAAGAACGAGGTTCTGCCTGAGAAGGGGGTC
 CTGATGGTAGTACCGATTCTGCTCCAAAGACGCAAGTCGGACTCT
 LysProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAla
 AAGCCAGCTGCTCATCGTGTGCCCCGATCTGGCGTGCACGCGTGTG
 TTCGGTCGAGCAGAGTAGACAAGGGCTAGACCCGACCGCACACG
 LeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGln
 TTGTACGACGTGGTACAAAGCTCCCCCTGGCGTGTGGAAAGCTCCTACGGATTCAA
 AACATGCTCACCAATGTTGAGGGGAAACGGCACTACCCCTCGAGGATGCCTAAGGTT
 TyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrPro
 TACTCACCAAGGACAGCGGGTTGAATTCTCGTGCAGCGTGGAAAGTCCA
 ATGAGTGGTCTGTCGCCACTTAAGGAGCACGTTGCACCTCAGGTTCTTGGGT
 MetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArg
 ATGGGGTTCTCGTATGATACCGCTGCTTGACTCCACAGTCAGTGAGAGCG
 TACCCCAAGAGCATACTATGGCGACGAAACTGAGGTGTCAGTGACTCTCG
 ThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLys
 ACGGAGGAGGCAACTACCAATGTTGTGACCTCGACCCCCAAGCCCGTGGCC
 TGCCCTCCGTTAGATGGTACAACACTGGAGCTGGGGTTGGCGCACCG
 SerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCys
 TCCCTCACCGAGAGGCTTATGTTGGGGCCCTCTTACCAATTCAAGGGGG
 AGGGAGTGGCTCCGAAATACAACCCCGGGAGAATGGTTAAGTCCCCCTTGC



FIG. 54I

7741 GlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThr
GGCTATCGCAGGTGCCGCGCAGCGCGTACTGACAACTAGCTGGTAACACCCCTCACT
CCGATAGCGTCCACGGCGCGCTGCCGCATGACTGTTGATGACACACCATTGGGGAGTGA

7801 CysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeu
TGCTACATCAAGGCCGGGCAGCTGTCGAGCCGAGGGCTCCAGGACTGCACCATGCTC
ACGATGTAGTCCGGGCCGTCGGACAGCTGGCGTCCGAGGTCCGTACGTGGTACGAG

7861 ValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGGGGGTCCAGGAGGACGCCG
CACACACCGCTGCTGAATCAGCAATAGACACTTCGCGCCCCCAGGTCCCTGCGCCGC

7921 SerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProPro
AGCTGAGAGCCTTCACGGAGGCTATGACCAAGGTACTCCGCCCCCTGGGGACCCCCA
TCGGACTCTCGGAAGTGCCTCCGATACTGGTCATGAGGCGGGGGGGACCCCTGGGGGGT

7981 GlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHis
CAACCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCAACGTGTCAGTCGCCAC
GTTGGCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGTG

8041 AspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArg
GACGGCGCTGGAAAGAGGGTCTACTACCTACCCGTGACCCCTACAACCCCCCTCGCGAGA
CTGCCCGCACCTTCTCCAGATGATGGAGTGGGACTGGGATGTTGGGGAGCGCTCT

8101 AlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMet
GCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCTGGCTAGGCAACATAATCATG
CGACGCACCCCTGTCGTTCTGTGAGGTCAAGTAAGGACCGATCCGTTGATTAGTAC

8161 PheAlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIle
TTTGCACACTGTGGCGAGGATGATACTGATGACCCATTCTTAGCGTCCTTATA
AAACGGGGGTGTGACACCCGCTCTACTATGACTACTGGTAAAGAAATCGCAGGAATAT

8221 AlaArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIle
GCCAGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGCCTGCTACTCCATA
CGGTCCCTGGTCGAACCTGTCCGGAGCTAACGCTCTAGATGCCCGACGATGAGGTAT

8281 GluProLeuAspLeuProProIleIleGlnArgLeu
GAACCACTTGATCTACCTCCAATCATTCAAAGACTC
CTTGGTGAACTAGATGGAGGTAGTAAGTTCTGAG



FIG. 55A

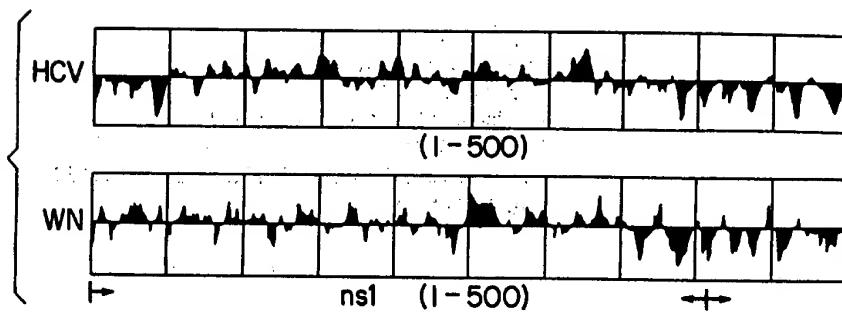


FIG. 55B

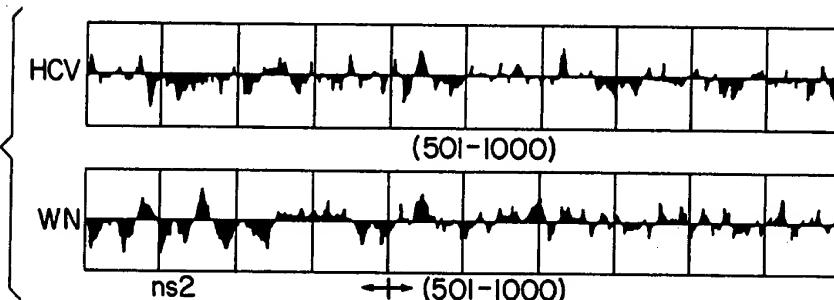


FIG. 55C

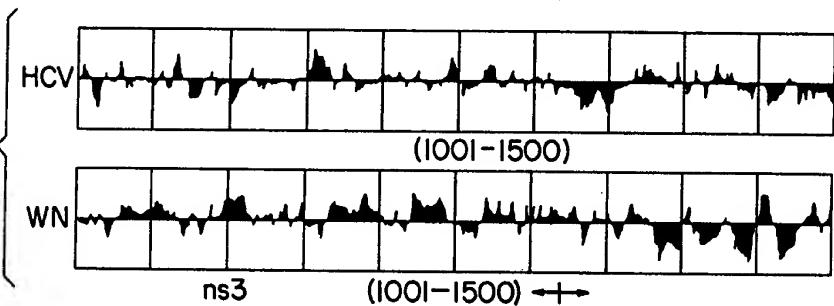


FIG. 55D

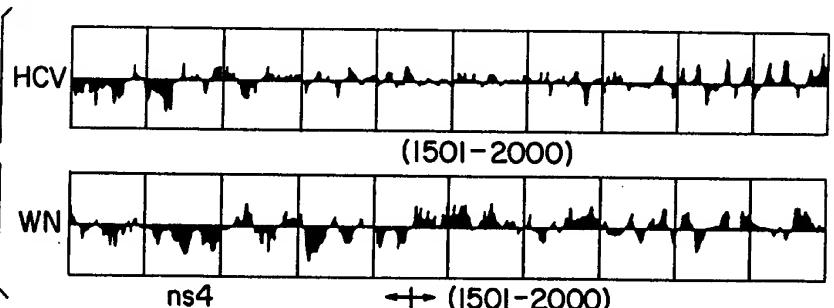


FIG. 55E

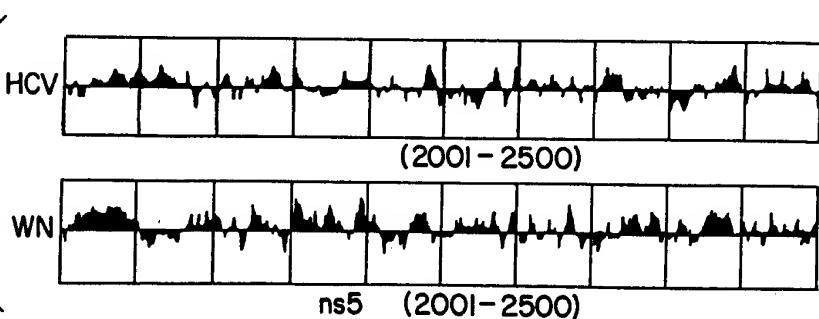




FIG. 56

ArgArgArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGlyPheAlaAsp
 1 CCCGGCGTAGGTGGTGGCAATTGGGTAAAGGTCAATCGGATAACCTTACGTTGGCTTCGGCG
 GGGCGCATCCAGGGCGTTAAACCCATTCCAGTAGCTATGGGAATGCACGCCGAAGGGCG
 LeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAla
 61 ACCTCATGGGTACATACCGCTCGTGGCCCTCTGGAGGGCTGCCAGGGCCCTGG
 TGGAGTACCCCATGTTATGGCGAGCCGGGGAGAACCTCCGGACGGTCCGGACC
 HisGlyValArgValLeuIleAspGlyValAsnTyrAlaThrGlyAsnLeuProGlyCys
 121 CGCATGGCGTCCGGGTCTGGAAAGACGGGGTGAACATATGCCAACAGGGAAACCTTCCCTGGTT
 GCGTACCGCAGGCCAAGACCTTCTGCCACTTGATACTGCTTGTGCCCTTGGAGGCCAA
 SerPheSerIlePheLeuLeuAlaLeuSerCysLeuThrValProAlaSerAlaTyr
 181 GCTCTTTCTCTATCTCCCTCTGGCCCTGCTCTGTGACTGTGCCGCTTCGGCCT
 CGAGAAAGAGATAGAAGGAAGACGGGAGAGAACGAACTGACACGGCGAAGCCGGA

 GluValArgAsnSerThrGlyLeuTyrrHisValThrAsnAspCysProAsnSerSerIle
 241 ACCAAGTGGCAACTCCACGGGGCTTTACACGTCACCAATGCTTACACTCGAGTA
 TGGTTCACGGCTTGAGGTGCCCAATGGTAGGTGCTTACTAACGGGATGAGCTCAT
 ----- overlap with CA167b -----
 ValTyrGluAlaAspAlaIleLeuHisThrProGlyCysValArgGlu
 301 TTGTGTACGAAAGCGCCGATGCCACACTCCTGGCAGTGGCTCCCTTGGCTTCGTG
 AACACATGCTTCGGCTACGGTAGGTGAGGGGGATGAGGGAAACGGCAAGC

 GlyAsnAlaSerArgCysTrpValAlaMetThrProThrValAla
 361 AGGGCAACGCCCTCGAGGTGTTGGGTGGCATGACCCCTACGGTGGCC
 TCCCCTGGGAGCTCCACAAACCCACCGCTACTGGGGATGCCACCGG



1 LysIysAsnLysArgAsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGly
 TTTTTTTGTTGCAATTGTTGGTGGCAGGGGTGCTGAGTTCAAGTTCCCCGGGTGGCG
 GlnIleValGlyGlyValTyrIleLeuProArgArgGlyProArgLeuGlyValArgAla
 61 GTCAGATCGTGGTGGAGTTTACTTGTGCCGGCGCAGGGGCCATGATTGGGTGTGCGCG
 CAGTCTAGCAACCACCTCAAATGAAACAACGGCGGTCCCCGGGATCTAACCCACACGGCG
 ThrArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnProIleProLysAla
 121 CGACGAGAAAGACTTCCGAGCGGTGCGCAACCTCGAGGTAGACGCCAGCCCTATCCCCAAGG
 GCTGCTCTTCTGAAGGCTCGCCAGCGTGGAGCTCATCTGGGTGGATAGGGGTTC
 ArgArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsn
 181 CTCGTCGGCCCCGAGGGCAGGACCTGGCTCAGCCCCGGTACCCCTCTATGGCA
 GAGCAGCCCCGGCTCCCGTCCCTGGACCCGAGTCGGGCCATGGGAACCGGGAGATAACCGT
 GluGlyCysGlyTrpAlaGlyTyrLeuUserProArgGlySerArgProSerTrpGly
 241 ATGAGGGCTGGGGTGGGGGATGGCTCCCTGTCTCCCTGGCTCTGGCTAGCTGGG
 TACTCCGACGCCACCGCCCTACCGAGGACAGAGGGCACCGAGGGATCGACCC
 ProThrAspProArgArgSerArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCys
 301 GCCCCACAGACCCCCGGCTAGGTCGGCAATTGGGTAAAGGTCACTGGATACCTTACGT
 CGGGGTGTGGGGGGCGATCCAGGGCGTAAACCCATTCCAGTAGCTATGGGAATGCA
 GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAla
 361 GGGGCTCGCCGACCTCATGGGTACATACCGCTCGTGGGGCTCTGGAGGGCGCTG
 CGCCGAAGGGCTGGAGTACCCCATGTATGGCGAGCAGCCGGGGAGAACCTCCGGAC
 ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsn
 421 CAAGGGCCCTGGGCCATGGCGTCCGGTTCTGGAAGAACGGCGTGAACATGCAACAGGGAA
 GGTCCCCGGACCCGTACCCGAGGGCAAGAACGAGAAAGAGATGGAAG

FIG. 57

FIG. 58A

#MetSerValValGlnProProGlyProProLeu

#MetAlaLeuValOP

1 CGCAGAAAGCGTCTAGCCATTGGCGTTAGTATGAGTGTGGTGCAGCCTCCAGGACCCCCC
GCGTCTTGCAGATCGGTACCGCAATCATACTCACAGCACGTCGGAGGTCTGGGGGG

ProGlyGluProAM

61

TCCCCGGAGAGCCATAGTGGTCTGGGAACCGGTGACTACACCGGAATTGCCAGGAC
AGGGCCCTCTCGGTATCACCCAGACGCCACTCATGTGGCCTTAACGGTCCTGCTG

#MetProGlyAspLeuGlyValProProGlnasp

121 CGGGTCCCTTCTGGATCAACCCGCTCAATGCCTGGAGATTGGCCGTGCCCCGCAAGA
GCCCAAGAAAGAACCTAGTTGGCCGAGTTACGGACCTCTAACCCGCACGGGGCGTTCT

CysAM

OP AM GLYAlaCys
*

181

CTGCTAGCCCCGAGTAGTGTGGTGCAGAACGCCCTGGTACTGCCTGATAGGCTT
GACGATCGGCTCATCACAAACCCAGGGCTTCCGGAACACCATGACGGACTATCCCACGGAA

GluCysProGlyargSerargargProCysThrMetSerThrAsnProLysProGlnLys



FIG. 58B

241 GCGAGTCCCCGGAGGTCTCGTAGACCGTGCACCATGAGCACGAATCCTAAACCTCAA
CGCTCACGGGCCCTCCAGAGCATCTGGCACGGTACTCGTGCTTAGGATTGGAGTT

LysAsnLysArgAsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGlyGln

301 AAAAACAAACGTAACACCAACCGTCGCCACAGGACGTCAGTTCCCGGTTGGC
TTTTTTTGTGTTGCATTGTTGGCTGGCAGCGGGTGTCTGCAGTTCAAGGGCCACGGCAG

IleValGlyGlyValTyrLeuLeuProArgArgGlyProArgLeuGlyValArgAlaThr

361 AGATCGTTGGAGTTACTTGTGCCCCGGCAGGGGCTTAGATGGGTGCGCGCGA
TCTAGCAACCACCTCAATGAACACGGCCCTCCCCGGATCTAACCCACACGGCGCT

ArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnProIleProLysAlaArg

421 CGAGAAAGACTTCCGAGCGGTGCGCAACCTCGAGGGTAGACCGTCAGCCTATCCCCAAGGCTC
GCTCTTCTGAAGGCTCGGCCAGCGTTGGAGCTCCATCTGCAGTCGGATAGGGTTCCGAG

ArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsnGlu



481 GTGGGCCGAGGACCTGGCTCAGCCGGTACCTGGCCCTCTATGGCAATG
CAGCCGGCTCCCTGCTGGACCCGAGTGGCCATGGGAACGGGAGATAACGGTTAC

GlyCysGlyTrpAlaGlyTrpIleLeuSerProArgGlySerArgProSerTrpGlyPro

541 AGGGCTGGGGTGGGGATGGCTCCCTGCTCTGGCTCTGGCTAGCTGGGGCC
TCCCGACCCCCACCCGCTACCGAGGACAGAGGGCACCGAGGGATCGACCCGG

ThrAspProArgargSerargAsnLeuGlyLysValleaspThrLeuThrCysGly

601 CCACAGACCCCCGGCGTAGGTCCGCCAATTGGGTAAGGTATCCCTTACGGTGCG
GGTGTCTGGGGCGCATCCAGCGCGTTAACCCATTCCAGTAGCTATGGGAATGCACGC

Phe

661 GCTTC
CGAAG

* = Start of long HCV ORF
| = Putative first amino acid of large HCV polyprotein
= Putative small encoded peptides (that may play a
translational regulatory role)

FIG. 58C



FIG. 59

ValleuGlyargGluargProCysGlyThrAlaOP AM GlyAlaCysGlucysProGly
1 GTCTGGGTGCCGAAGGCCTTGTGGTACTGCCTGATAAGGGTGCTTGGAGTGGGGGG
CAGAACCCAGCGCTTCCGGAACACCATGACGGACTATCCACGCTCACGGGGCC

*

ArgSerArgArgProCysThrMetSerThrAsnProlysProGlnArglySthrLysArg
61 AGGTCTCGTAGACCGTGCACCATGAGCACGAATCCTAAACCTCAAAACAAACGT
TCCAGAGCATCTGGCACGGTACTCGTGCTTAGGATTGGAGTTCTTTGGTTTGC

AsnThrAsnArgArgProGlnAspValPheProGlyGlyGlyGly
121 AACACCAACCGTCGGCACAGGACGTCAAGTCCGGGTGGGGTCAGATCGTTGGTGA
TTGGTGGCAGGGGGTGTCTGCAAGGGCCCACGCCAGTCTAGCAACCACCT

ValTyrLeuLeuProArgArgGlyProArgLeuGlyValArgAlaThrArgLysThrSer
181 GTTTACTTGTGGCCGCCAGGGCCTAGATTGGGTGTGCCGCCGACGAGAAAGACTTCC
CAAATGAAACACGGGGTCCCCGGATCTAACCCACACGGGCTGCTCTTCTGAAGG

overlap with CA290a

GluArgSerGlnProArgGlyArgArgGlnProlineProlysAlaArgArgProGly
241 GAGGGTGGCAACCTCGAGGGTAGACGTCAGCCCTATCCCCAAGGCTCGTGGCCGAGGGC
CTCGCCAGCGTTGGAGCTCCATCTGCACTGGGATAGGGTTCCGAGGCCAGGGCTCCG

ArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsnGluGlyCys
301 AGGACCTGGCTCAGCCCCGGTACCCCTTGCCCTATGGCAATGAGGGCTGG
TCCTGGACCCGAGTCGGGCCATGGAACCGGGGAGATAACCGTTACTCCCGACGC

* = putative initiator methionine codon



FIG. 60

#ProProOP

#SerThrMetAsnHisSerProValArgAsnTyrCysLeuHisAlaGluSerValAM
1 CTCCACCATGAACTCACTCCCCTGTGAGGAACTAACGTGCTTCACGCAGAAAGCGTCTAGCC
GAGGTGGTACTTAGTGAGGGGACACTCCTGTGATGACAGAAAGTGCGTCTCGCAGATCGG

#MetSerValValGlnProProGlyProProLeuProGlyGluProAM

MetalalLeuValOP
61 ATGGCGTTAGTATGAGTGTGCGTGCAGCCTCCAGGACCCCCCTCCGGAGGCCATAGT
TACCGCAATCATACTCACAGCACGTCGGAGGTCTGGGGGGAGGCCCTCTCGGTATCA

GGTCTGCGGAACCGGGTGGAGTACACCGGAATGCCAGGAACGGGGCTTCTTGATC
CCAGACGCCTTGGCCACTCTAGTGGCTTAACGGTCTGGCCAGGAAGAACCTAG
-----overlap with ag30a-----

#MetProGlyAspIleuGlyValProProGlnAspCYSAM

181 AACCCGCTCATGCCTGGAGATTGGCGTGGCCCCGCAAGACTGCTAGCCGAGTAGTGT
TTGGGCAGTTACGGACCTCTAACCGCACGGGGCGTCTGACGATCGGCTCATCACA

OP AM GLYAlaCysGluCysProGlyArgSer

241 TGGGTCCGAAAGGCCCTGTGGTACTGCCCTGATAGGGTGTGGAGGTGCCCCGGAGGT
ACCCAGCGCTTCCGGAACACCATGACGGACTATCCCACGAAACGCTCACGGGGCCCTCCA

ArgArg * = Start of long HCV ORF

= Putative small encoded peptides (that may
play a translational regulatory role)

301 CTCGTAGA
GAGCATCT



FIG. 61

-----Overlap with 15e -----

GlyAlaCysTyrSerIleGluProLeuAspLeuProProIleGlnArgLeuHisGly
1 GGGGCCTACTCCATAGAACCACTGGATCTACCTCCAATCATCAAAGACTCCATGGC
CCCCGGACGATGAGGTATCTGGTGACCTAGATGGAGGTTAGTAAGTTCTGGAGGTACCG

LeuSerAlaPheSerLeuHisSerTyrSerProGlyGluIleAsnArgValAlaAlaCys
61 CTCAGGCCATTTCACTCCACAGTTACTCTCCAGGTGAATTATAGGGTGGCCATGC
GAGTCGCGTAAAGTGAGGTGTCAATGAGAGGTTCCACTTTAATTATCCCACCGGCGTACG

Gly*
G

LeuArgGlyLeuGlyValProProLeuArgGalaTrpArgHisArgGalaArgSerValArg
121 CTCAGAAACTTGGGTACCGCCCTGGAGACACGGGGGGAGCGTCCGC
GAGTCTTTGAACCCCATGGGGAACGCTCGAACCTCTGTGGCCGGCCTCGCAGGGC
AlaArgLeuLeuAlaArgGlyGlyArgGalaAlaIleCysGlyLysTyrLeuPheAsnTrp
181 GCTAGGCTCTGGCCAGAGGGCAGGGCTGCCATATGTGGCAAGTACCTCTCAACTGG
CGATCCGAAGACCGGTCTCCTCCGTCGGACGGTACACCGTTCATGGAGAAGTTGACC

AlaValArgThrLysLeuLys
241 GCAGTAAAGAACAAAGCTCAAAC
CGTCATCTGTTCGAGTTG

* = nucleotide heterogeneity



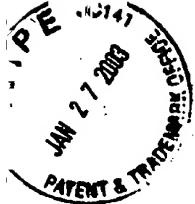


FIG. 62A

CACTCCACCATGAATCACTCCCTGTGAGGAACACTGTCTTCACGCAGAAAGCGTCTAG
 CCATGGCGTTAGTATGAGTGTGCGACGCCCTCAGGACCCCCCTCCGGGAGAGGCCATA
 GTGGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTCTTGGGA
 TCAACCCGCTCAATGCCTGGAGATTGGCGTGCCCCGCAAGACTGCTAGCCGAGTAGT
 GTTGGGTCGCGAAAGGCCTTGTGGTACTGCCTGATAGGGTGTGCGAGTGCCCCGGGAG-300

---(Putative initiator methionine codon)
 GTCTCGTAGACCGTGCACCATGAGCACGAATCTAAACCTCAAAAAAAACAAACGTAA
 CACCAACCGTCGCCACAGGACGTCAAGTTCCGGTGGCGGTAGATCGTTGGTGGAGT
 TTACTTGTGCGCGCAGGGCCCTAGATTGGGTGTGCGCGCGACGAGAAAGACTTCCGA
 GCGGTGCGCAACTCGAGGTAGACGTCAGCCTATCCCCAAGGCTCGTGGGCCAGGGCAG
 GACCTGGGCTCAGCCGGGTACCCCTGGCCCTATGGCAATGAGGGCTGCGGGTGGGC-600
 GGGATGGCTCTGTCTCCCGTGGCTCTGGCCTAGCTGGGGCCCCACAGACCCCCGGCG
 TAGGTGCGCAATTGGGTAAAGGTATCGATACCCCTACGTGCGGTTGCCGACCTCAT
 GGGGTACATACCGCTCGTGGCGCCCTCTTGGAGGCCTGCCAGGGCCCTGGCGCATGG
 CGTCGGGTTCTGGAAAGACGGCGTGAACATGCAACAGGAACCTCTGGTTGCTCTT
 CTCTATCTCCCTCTGGCCCTGCTCTTGACTGTGCCGCTTGGCCCTACCAAGT-900
 GCGCAACTCCACGGGGCTTACACAGTCACCAATGATTGCCCTACTCGAGTATTGTGA
 CGAGGGCGCCGATGCCATCTGCACTCGGGCTCGTGGCGTCCCTGCGTTGAGGGCAA
 CGCCTCGAGGTGTTGGCGATGACCCCTACGGTGGCCACCGGGATGGCAAACCTCCC
 CGCGACGCGAGCTCGACGTACATCGATCTGCTTGTGGAGCGCCACCCCTGTTCGGC
 CCTCTACGTGGGGGACCTATGCCGGTCTGTCTTCTGTGGCCAACGTGTTCACCTCTC-1200
 TCCCAGGCGCACTGGACGACGCAAGGTTGCAATTGCTCATCTATCCGGCCATATAAC
 GGGTCACCGCAGGGATATGATGATGAACTGGTCCCTACGACGGCGTTGGTAAT
 GGCTCAGCTGCTCCGGATCCCACAAGCCATCTTGGACATGATCGCTGGTGTCACTGGGG
 AGTCTTGGCGGGCATAGCTTACCATGGTGGGGAACTGGCGAAGGTCTGGTAGT
 GCTGCTGCTATTGCGGCGTGCACCGCGAACCCACGTACCCGGGGAAAGTGCAGGCA-1500
 CACTGTCTGGATTGTTAGCCTCTCGCACCAAGGCGCAAGCAGAACGTCAGCTGAT
 CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACTGCAATGATAGCCTCAA
 CACCGGCTGGTGGCAGGGGTTCTACCAACACAGTTCAACTCTTCAAGGCTGTCTGA
 GAGGCTAGCCAGCTGGCACCCCTAACGATTGACCTGGAGGGCTGGGCCCTACAGTTA
 TGCCAAACGGAAAGCGGGCCCGACCGCGCCCTACTGCTGGCACTACCCCCCAGACCTTG-1800
 CGGTATTGTGCCCGCGAAGAGTGTGTTGGTCCGGTATATTGCTTCACTCCAGGGCGT
 GGTGGTGGGAAACGACCGACAGGTGCGGCGGCCACCTACAGCTGGGGTAAAATGATAC
 GGACGTCTTGTCTTAAACATACCAAGGCCACCGCTGGCAATTGGTTGGTTGACCTG
 GATGAACTCAACTGGATTACCAAAAGTGTGCGGAGCGCCTCTTGTGTCATGGAGGGC
 GGGCAACAAACACCCCTGCACTGCCCACTGATTGCTTCCGCAAGCATCGGACGCCACATA-2100
 CTCTCGGTGCCGCTCCGGCTGGATCACACCCAGGTGCTGGTCACTACCCGTATAG
 GCTTTGGCATTATCCTTGACCATCAACTACACCATATTAAAATCAGGATGTAACGTGGG
 AGGGGTCGAACACAGGCTGGAAAGCTGCTGCAACTGGACCGGGGCGAACGTTGCGATCT
 GGAAGACAGGGACAGGTGCGAGCTCACCCGGTTACTGCTGACCACTACACAGTGGCAGGT
 CCTCCCGTGTCTTCAACACCTACCGCTTGCACCCGGTTACTGCTGACCACTACACAGTGGCAGGT-2400
 GAACATTGTGGACGTGCAAGTACTTGTACGGGGTGGGGTCAAGCATCGCTCTGGCCAT
 TAACTGGGAGTACGTGCTCTCTGTTCTGCTGCAAGACGCGCGCGTCTGCTCTG
 CTTGTGGATGATGCTACTCATATCCCAAGCGGAGGGCGTTGGAGAACCTGTAATAACT
 TAATGCAAGCATCCCTGGCGGGACGCAAGGTCTGTATCTTCTCGTGTCTTGCTT
 TGATGGTATTGAAAGGTAAAGTGGGTGCCGGAGCGGTACACCTTCACTGGGATGTG-2700
 GCCTCTCTCCCTGCTCTGGCGTTGGCGTGCCTGGGGTACCGGGCGTACCGGACACGGAGGT
 GGCGCGTGTGTGGCGGTGTTCTCGTGGGGTGTGACTCTGTGCTACCATA
 TTACAAGCGCTATACAGCTGGTGCTGTGTTGCTGAGTATTCTGACCATGGGAGGGGGGGCGACGCCGT
 AGCGCAACTGCACTGGGATACCCCCCTCAACGTCAGGGGGGGGGCGACGCCGT
 CTTACTCATGTGCTGTCACACCCGACTCTGGTATTGACATCACCAAAATTGCTGCTGGC-3000
 CGTCTTGGACCCCTTGGATTCTCAAGCCAGTTGCTTCAAGTACCCCTACTTTGTGCG
 CGTCAAGGCCCTCTCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGT
 GCAAATGGTACATTAAGTTAGGGCGCTTACTGGCACCTATGTTATAACCATCTCAC
 TCCTCTCGGGACTGGGCGACAACGGCTTGCAGAGATCTGGCGTGGCTGAGAGCCAGT
 CGTCTTCTCCAAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGCAGG-3300
 TGACATCATCAACGGCTTGCCTGTTCCGCCGCCAGGGGCCGGAGATACTGCTCGGGC
 AGCGATGGAATGGTCTCCAAGGGGTGGAGGGTGTGGCGCCCATCACGGCGTACGCCA
 GCAGACAAGGGGCCCTCCTAGGGTGCATAATCACAGCCTAATGGCCGGGACAAAAACCA
 AGTGGAGGGTGAGGTCCAGATTGTGTCACGTGCTGCCAACCTTCTGGCAACGTGCA

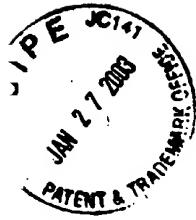


FIG. 62B

CAATGGGGTGTGCTGGACTGTCTACCACGGGGCGGAACGAGGACCATCGCGTACCCAA-3600
GGGTCCCTGTATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCGCTCC
GCAAGGTAGCCGCTCATGGACACCCCTGCACTTGCCTCTCGGACCTTACCTGGTCAC
GAGGCACGCCGATGTCATTCCTGGCCGGGGGTGATAGCAGGGCAGCCTGCTGTC
GCCCGGGCCCATTCTACTTGAAAGGCTCTCGGGGGTCCGTTGTGCCCCGCGGG
GCACGCCGTGGCAATTAGGGCCGGTGTGACCCGTGGAGTGGCTAAGGCGGTGGA-3900
CTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTC
CTCTCCACCAGTAGTGCCTCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCCACAGGCAG
CGGCAGAACCAAGGTCCTCGCTGACATATGCACTCAGGGCTATAAGGTGCTAGTACT
CAACCCCTCTGTTGTCACACACTGGGTTGGTCTACATGTCACAGGCTCATGGGAT
CGATCCTAACATCAGGACGGGGTGGAGAACAAATTACCACTGGCAGCCCCATCACGTACTC-4200
CACCTACGGCAAGTTCCTGGCAGGGGGTGTGGGGGGCCTTATGACATAATAAT
TTGTGACGAGTGCACCTCACGGATGCCACATCCATCTGGGATCGGCACTGTCCTTG
CCAAAGCAGAGACTGCGGGGGCAGACTGGTTGTGCTCGCACCGCCACCCCTCCGGGCTC
CGTCACTGTGCCCATCCAACATCAGGGAGGGTGTCTGTCACCCACCGGAGAGATCCC
TTTTACGGCAAGGCTATCCCCCTGAGAATCAAGGGGGGGAGACATCTCATCTTGTG-4500
TCATTCAAAGAAGAAGTGCACGAACTGCCGAAAGCTGGTGCATTGGCATCAATGC
CGTGGCCTACTACCGCGGTCTTGACGTGTCCGTACATCCCACAGGGCGATGGTGT
CGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCACCTCGACTCGGTGATAGACTG
CAATACGTGTGTCACCCAGACAGTGTGACCTTACGGCTTACCTTACCGGCTACCTTAC
AATCACGCTCCCCCAGGATGTCGTCTCCGCACACTAACGTGGGGCAGGACTGGCAGGGG-4800
GAAGGCCAGGCATCTACGAGATTGTGGCAGGGCTGTGCTTGGTATGAGCTACGCCGCG
GTCCGCTCTGTGAGTGTATGACGGCTGTGCTTACGGCCTACTCATATAGATGCCACTTCTATC
GACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCGGATGTCGACTC
TCTTGAATTGGGAGGGCGTCTTACAGGCCTACTCATATAGATGCCACTTCTATC
CCAGACAAAGCAGAGTGGGAGAACCTCCTTACCTGGTAGCGTACCAAGCCACCGTGTG-5100
CGCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACAGATGTGGAGTGTGTTGATTGCGCT
CAAGCCCACCCCTCATGGCCAACACCCCTGCTATACAGACTGGGCCTGTCAGAATGA
AATCACCTGACGCACCCAGTCACCAAATACATCATGACATGTCATGTCGGCCGACCTGG
GGTCGTACGAGCACCTGGGTGCTGTTGGCGGTCTGGCTGCTTTGGCGCGTATTG
CCTGTCAACAGGCTGCGTGGTCATAGTGGGAGGGCTGTGCTTGTCCGGGAAGCCGGCAAT-5400
CATACCTGACAGGGAAAGTCTTACCGAGAGTTCGATGAGATGGAAAGAGTGTCTCAGCA
CTTACCGTACATCGAGCAAGGGATGATGTCGTCGGCGAGCAGTCAAGCAGAAGGCCCTCG
CCTCCTGCGAGACCGCGTCCCGTCAGGGTATCGCCCTGCTGTCAGACCAACTG
GCAAAACTCGAGACCTTGGCGAAGCATATGTGGAACTTCATCAGTGGGATACAATA
CTTGGCGGGCTTGTCAACGCTGGTAAACCCCGCATTGCTTCAAGATCATGAGCGGTGAGGTCCC
AGCTGCTGTCAACGCCCACTAACCAACTAGCAAACCCCTCTTCAACATATTGGGGGG
GTGGGTGGCTGCCAGCTGCCGCCCCGGTGGCTACTGCCCTTGTGGCGCTGGCTT
AGCTGGCGCCGCCATCGGCAGTGTGGACTGGGAAGGTCTCATAGACATCCTTGCAAG
GTATGGCGCGGGCGTGGCGGGAGCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCC
CTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTGCCGGAGGCCCTCGTAGT-6000
CGGCCTGGTCTGTGCAAGCAATACTGCCGCCAGCTGGCCGGAGGGGGAGGGGGCAGTGCA
GTGGATGAACCGGCTGATAGCCTTGCCTCCGGGGAAACCATGTTCCCCACGCCACT
CGTGCCTGGAGAGCGATGCACTGCCCGTCACTGCCATACTCAGCAGCCTCACTGTAAC
CCAGCTCTGAGGGCACTGCCACAGTGGATAAGCTCGGAGTGTACCAACTCCATGCTCCGG
TTCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGAGCGACTTAAAGACCTG-6300



FIG. 62C

GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGATCCCTTGTGCTCTGCCAGCGCGG
GTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
GATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCTAGGACCTGCAGGAA
CATGTGGAGTGGGACCTTCCCCATTAAATGCCATACACACGGGCCCCGTACCCCCCTTCC
TGCGCCAACTACACGTTCGCGTATGGAGGGTGTGCAGAGGAATATGTGGAGATAAG-6600
GCAGGTGGGGACTTCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTG
CCAGGTCCCCTGCGCCGAATTTCACAGAATTGGACGGGTGCGCCTACATAGGTTGC
GCCCTTGTCAAGCCCCCTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGAATA
CCCCTGTAAGGGTGCATAATTACCTTGCAGGCCGAACGGGACGTGGCGTGTGACGTCCAT
GCTCACTGATCCCTCCATATAACAGCAGAGGGCGGGGGGAAGGTTGGCGAGGGGATC-6900
ACCCCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAAC
TTGCAACCGCTAACCATGACTCCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCATGGAG
GCAGGAGATGGCGCAACATCACCAAGGGTTGAGTCAGAAAACAAGTGGTGATTCTGGA
CTCCTTGTGATCCGCTTGTGGCGAGGAGGACGAGCGGGAGATCTCCGTACCCGAGAAAAT
CCTGCGGAAGTCTCGGAGATTGCCAGGGCCCTGCCGTTTGGCGCGGGACTATAA-7200
CCCCCCTGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACCTGTGGTCCATGGCTG
TCCGCTTCAACCTCCAAAGTCCCTCCTGTGCCCCCTCGGAAGAAGCGGACGGTGGT
CCTCACTGTAATCAACCTATCTACTGCCTTGGCCAGCTGCCACAGAAGCTTGGCAG
CTCCTCACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCCTTC
TGGCTGCCCTGGGACTCCGACGGCTGAGTCTATTCCCTCATGCCCTGGAGGGGAA-7500
GCCTGGGATCCGGATTTAGCGACGGGTATGGTCAACGGTCAGTAGTGGAGGCCAACGC
GGAGGATGTCGTGTGCTCAATGTCTTACTCTGGACAGGGCAGCTGTCACCCCGTG
CGCCGCGGAAGAACAGAAAATGCCCATCAATGCACTAAGCAACTCGTGTGACGTACCA
CAATTGGTGTATTCACCAACCTCACGCACTGCTGCCAAAGGCAGAAGAACAGTCAACATT
TGACAGACTGCAAGTTCTGGACAGCATTACCAAGGACGACTCAAGGAGGTTAACGCAGC-7800
GGCGTAAAAGTGAAGGCTAACCTGCTATCCGTAGAGGAAGCTGAGCCTGACGCC
ACACTCAGCCAATCCAAGTTGGTATGGGCAAAGACGTCGTTGCCATGCCAGAAA
GGCCGTAAACCCACATCAACTCCGTGTGAAAGACCTTCTGGAAAGACAATGTAACACCAAT
AGACACTACCATCATGGTCAAGAACAGGAGTTTCTGCGTTAGCCTGAGAAGGGGGTGC
TAAGCCAGCTGCTCATCGTGTCCCCGATCTGGCGTGCCTGCGAAAGATGGC-8100
TTTGTACGACGTGGTACAAAGCTCCCTGGCGTGATGGGAAGCTCCTACGATTCCA
ATACTCACCAGGACAGCGGGTTGAATTCTCGTGTGCAAGCGTGGAAAGTCAAGAAAACCC
AATGGGGTTCTGTATGATACCCGCTGCTTACTCCACAGTCACTGAGAGCGACATCCG
TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCGCGTGGCCATCAA
GTCCCTCACCGAGAGGCTTATGTTGGGGCCCTTACCAATTCAAGGGGGAGAACG-8400
CGGCTATCGCAGGTGCCGCGAGCAGCGTACTGACAACTAGCTGTGTAACACCCCTCAC
TTGCTACATCAAGGCCGGGAGCGCTGTGAGCCGAGGGCTCCAGGACTGACCATGCT
CGTGTGTGGAGCAGACTTAGTCGTTATCTGTGAAAGCGGGGGTCCAGGAGGACGCGG
GAGCCTGAGAGGCTCACGGAGGCTATGACAGGACTCCGCCCTGGGACCCCC
ACAACCAGAACATGACTTGGAGCTACATACATGCTCTCCAAACGTGTAGTCGCCCCA-8700
CGACGGCCTGGAAAGAGGGTCTACTACCTCACCGTGAACCTACAAACCCCCCTCGCAG
AGCTGCGTGGGAGACAGCAAGAACACACTCCAGTCAATTCTGGCTAGGCAACATAATCAT
GTTTGGCCCCACACTGTGGCGAGGATGACTGATGACCTGACCCCCAATTTCTTAGCGTCTTAT
AGCCAGGGACAGCTGAAACAGGGCTCGATTGCGAGATCTACGGGGCTGCTACTCCAT
AGAACCACTTGTACTACCTCAATCATTCAAAGACTCCATGGCTCAGCGCATTTCAGT-9000
CCACAGTTACTCTCCAGGTGAAATTAAATAGGGTGGCCGATGCCCTCAGAAAACCTGGGGT
ACCGCCCTTGCAGCTGGAGACACCGGGCCGGAGCGTCCCGCAGGCTTCTGGCCAG
AGGAGGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGCAGTAAGAACAAAGCT
CAAAC



FIG. 62D

1 CACTCCACCATGAATCACTCCCCTGTGAGGAACACTGTCTTCACGCAGAAAGCGTCTAG
GTGAGGTGGTACTTAGTGAGGGGACACTCCTTGATGACAGAAGTGCCTTCAGATC
61 CCATGGCGTTAGTATGAGTGCGTGCAGCCTCCAGGACCCCCCTCCCGGGAGAGCCATA
GGTACCGCAATCATACTCACAGCACGTCGGAGGTCTGGGGGGAGGGCCCTCTCGGTAT
121 GTGGTCTCGGAAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTCTTGA
CACCAGACGCCCTGGCCACTCATGTGGCCTTAACGGTCTGCTGGCCCAGGAAAGAACCT
181 TCAACCCGCTCAATGCCCTGGAGATTGGCGTGCCCCCGCAAGACTGCTAGCGAGTAGT
AGTGGGCGAGTTACGGACCTAAACCGCACGGGGCGTTCTGACGATCGGCTCATCA
241 GTGGGTCGCGAAAGGCCCTGTGGTACTGCCGTAGGGTCTGCGAGTGCCCCGGAG
CAACCCAGCGCTTCCGAACACCATGACGGACTATCCCACGAACGCTCACGGGGCCCTC
301 GTCTCGTAGACCGGTGACCATGAGCACGAATCTAAACCTAAAAAAACAAACGTAA
CAGAGCATCTGGCACGTGGTACTCGTCTAGGATTTGGAGTTTTTTTTGTTGCTTGCATT
361 CACCAACCGTCGCCACAGGACGTCAAGTTCCCGGTGGCGGTAGATCGTTGGAGT
GTGGTGGCAGCGGGTGTCTGCAGTTCAAGGGCCACGCCAGTCTAGCAACCACCTCA
421 TTACTTGTGCCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCAGGAGAAAGACTTCCGA
AATGAACAACGGCGCTCCGGATCTAACCCACACGCGCGCTGCTCTTCTGAAGGCT
481 GCGGTGCAACCTCGAGGTAGACGTCAGCCTATCCCCAAGGCTCGTCGGCCCAGGGCAG
CGCCAGCGTGGAGCTCCATCTGCACTGCGATAGGGGTTCCGAGCAGCCGGCTCCGTC
541 GACCTGGCTCAGCCGGTACCCCTGGCCCTCTATGGCAATGAGGGCTGCCGGTGGAGC
CTGGACCCGAGTCGGGCCATGGAACCGGGGAGATACCGTTACTCCCACGCCACCCG
601 GGGATGGCTCCTGTCTCCCGTGGCTCTGGCCTAGCTGGGGCCACAGACCCCCGGCG
CCCTACCGAGGACAGAGGGGACCGAGAGCCGGATCGACCCGGGTGCTGGGGGCCGC
661 TAGGTGCGCAATTGGTAAGGTATCGATACCTTACGTGCGGCTTCGCCGACCTCAT
ATCCAGCGCTTAAACCCATTCCAGTAGCTATGGGAATGCAACGCCAAGCGGCTGGAGTA
721 GGGGTACATACCGCTCGCGGCCCTCTGGAGGCGCTGCCAGGGCCCTGGCGCATGG
CCCCATGTATGGCGAGCAGCGCGGGAGAACCTCCCGCACGGTCCGGACCAGCGTACCC
781 CGTCCGGTTCTGGAAGACGGGTGAACTATGCAACAGGGAACCTCTGGTTGCTCTT
GCAGGCCAAGACCTCTGCCGACTTGATACGTTGCTGGAGGACCAACGAGAAA
841 CTCTATCTCTCTGGCCCTGCTCTTGTGACTGTGCCGCTCGGCCTACCAAGT
GAGATAGAAGGAAGACGGGACGAGAGAACGAACTGACACGGCGAAGCCGGATGGTCA
901 GCGCAACTCCACGGGGCTTACCACTGAGTGCCTAACTCGAGTATTGTGA
CGCGTTGAGGTGCCGGAAATGGTGAGTGGTTACTAACGGGATTGAGCTATAACACAT
961 CGAGGCAGGCCATGCCATCCTGCACACTCCGGGGTGCCTCCCTGCCTGGAGGGCAA
GCTCCGCCGGTACGGTAGGACGTGAGGGCCACGCCAGGGAACGCAAGCACTCCGTT
1021 CGCCTCGAGGTGTTGGTGGCGATGACCCCTACGGTGGCCACCGGGATGGCAAACCTCC
GCGGAGCTCCACACCCACCGCTACTGGGGATGCCACCGGGTGGCTACCGTTGAGGG
1081 CGCGACGCAGCTCGACGTACATCGATCTGCTGTGCGGGAGCGCCACCCCTGTTGGC
GCGCTGCGTCAAGCTGAGTGTAGACGAACAGCCCTCGCGGTGGAGACAAAGCCG
1141 CCTCTACGTGGGGACCTATGCCGGTCTGTCTTCTGCGCCAACGTTCACCTCTC
GGAGATGCACCCCTGGATACGCCAGACAGAAAGAACAGCCGGTTGACAAGTGGAGAG
1201 TCCCAGGCACACTGGACGCGAAGGTTGCAATTGCTCTATCTATCCGCCATATAAC
AGGGTCCCGGGTACCTGCTGCCGTTAACGTTAACGAGATAGATAGGGCCGGTATATTG
1261 GGGTACCGCATGGCATGGGATATGATGATGAACTGGTCCCTACGACGGCGTTGGTAAT
CCAGTGGCGTACCGTACCCCTATACTACTACTTGACCAAGGGATGCTGCCGCAACCATTA



FIG. 62E

1321 GGCTCAGCTGCTCCGGATCCACAAGCCATCTTGGACATGATCGCTGGTGCCTACTGGGG
CCGAGTCGACGAGGCCTAGGGTGTTCGGTAGAACCTGTACTAGCGACCACGAGTGACCCC
1381 AGTCCTGGCGGGCATAGCGTATTCTCATGGTGGGGAACTGGCGAAGGTCTGGTAGT
TCAGGACCGCCGTATCGATAAAGAGGTACCAACCCCTTGACCCGCTTCAGGACCATCA
1441 GCTGCTGCTATTGCCGGCGTCAGCGGAAACCCACGTACCGGGGGAAAGTGCAGGCCA
CGACGACGATAAACGGCCGAGCTGCGCCTTGGTGCAGTGGCCCCCTTCAGGCCGGT
1501 CACTGTGTCTGGATTGTTAGCCTCTCGACAGGCCAAGCAGAACGTCCAGCTGAT
GTGACACAGACCTAAACAATCGGAGGAGCGTGGTCCGGTTCTGAGGTGACTA
1561 CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACTGCAATGATAGCCTAA
GTTGTGGTGCCTCAACCGTGGAGTTATCGTGCAGGACTTGACGTTACTATCGGAGTT
1621 CACCGGCTGGTTGGCAGGGCTTTCTATCACCACAAGTCAACTCTCAGGCTGCTCTGA
GTGGCCGACCAACCGTCCCGAAAAGATAGTGGTGTCAAGTTGAGAAGTCCGACAGGACT
1681 GAGGCTAGCCAGCTGCCGACCCCTTACCGATTTGACCAGGGCTGGGGCCCTATCAGTTA
CTCCGATCGGTCGACGGCTGGGAATGGCTAAACTGGTCCCAGCCGGATAGTCAAT
1741 TGCCAAACGGAAGCGGGCCCCGACCAGCGCCCTACTGCTGGACTACCCCCCAAAACCTTG
ACGGTTGCCCTCGCCGGGGCTGGTGCAGGGGATGACGACCGTGTGGGGGGTTTGGAAC
1801 CGGTATTGTGCCCGCAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCCAGCCCCGT
GCCATAAACACGGCGCTCTCACACACACCAGGCCATATAACGAAGTGAAGGTGAGGGCTGGGGCA
1861 GGTGGTGGGAACGACCGACAGTGTGGTCCGGTACCTACAGCTGGGTGAAATGATAC
CCACCAACCTTGCTGGTGTCCAGCCCGCAGGGTGGATGTCGACCCACTTTACTATG
1921 GGACGTCTCGTCCTAACAAATACCAGGCCACCGCTGGCAATTGGTCCGGTTGACCTG
CCTGCAGAACAGGAATTGTTATGGTCCGGTGGCACCGTTAACCAAGCCAACATGGAC
1981 GATGAACACTGGAATTCAACAAAGTGTGGGAGCGCCTCCTGTGTATCGGAGGGGC
CTACTTGAGTTGACCTAACGGTTACACGCCCTCGCGAGGAACACAGTAGCCTCCCCG
2041 GGGCAACAAACACCCCTGCACTGCCCACTGATTGCTCCGCAAGCATCCGACGCCACATA
CCCGTTGTTGTGGACGTGACGGGGTGAACAGAACGGCTGTAGGCCTGCGGGTGTAT
2101 CTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCCTGGTCAACTACCGTATAG
GAGAGCCACGCCAGGGCAGGGACCTAGTGTGGTCCACGGACCAGCTGATGGCATATC
2161 GCTTGGCATTATCCTGTACCATCAACTACACCATATTAAAATCAGGATGTACGTGGG
CGAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAATTAGTCCTACATGCACCC
2221 AGGGGTCGAACACAGGCTGGAAAGCTGCCGCAACTGGACGCCGGCGAACGTTGCATCT
TCCCCAGCTGTGTCGACCTCGACGGACGTTGACCTGCCCGCTTGCACCGCTAACGCTAGA
2281 GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCAACTACACAGTGGCAGGT
CCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGTAGTGTACCCGCTAAC
2341 CCTCCCGTGTCTTCAACACCTACAGCCTTGTCCACCGGCCCTATCCACCTCCACCA
GGAGGGCACAGGAAGTGTGGGATGGTGGACAGGTGGCCGGAGTAGGTGGAGGTGGT
2401 GAACATTGTGGACGTGCACTTGTACGGGGTGGGGTCAAGCATCGCTCTGGGCCAT
CTTGTAACACCTGCACGTCACTAACATGCCCAACCCAGTTGTAAGCGCAGGACCCGGTA
2461 TAAGTGGGAGTACGTGTTCTCTGTTCTCTGCTGCAAGCAGCGCGCGTCTGCTCTG
ATTCAACCTCATGCAGCAAGAGGACAAGGAAGACGACGACTGTGCGCGCAGACGAGGAC
2521 CTTGTGGATGATGCTACTCATATCCAAGCGGAGGCGCTTGGAGAACCTCGTAATACT
GAACACCTACTACGATGAGTATAGGGTGTGCGCTCCGCCAACCTCTTGGAGCATTATGA
2581 TAATGCAGCATCCCTGGCGGGACGCACGGTCTTGTATCCTTCTCGTGTGTTCTGCTT
ATTACGTCGTAGGGACCGGCCCTGCGTGCAGAACATAGGAAGGAGCACAAAGAAGACGAA



FIG. 62F

2641 TGCAATGGTATTGAAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCTTACGGGATGT
ACGTACCATAAACTTCCCATTACCCACGGGCTCGCCAGATGTGAAGATGCCCTACAC
2701 GCCCTCCTCCTGCTCCTGTTGGCGTTGCCCGAGCGGGCGTACGCGCTGGACACGGAGGT
CGGAGAGGAGGACGAGGACAACCGAACGGGTCGCCATGCGCAGCTGTGCCCTCA
2761 GGCGCGTCGTGTCGGGTGTTCTCGTCGGGTGATGGCGCTGACTCTGTACCCATA
CCGGCGCAGCACACCGCCACAACAAGAGCAGCCAACCTACCCGACTGAGACAGTGGTAT
2821 TTACAAGCGCTATATCAGCTGGTGCTTGTGGCTTCAGTATTTCTGACCAAGAGTGG
AATGTTCGCGATATAGTCGACCAACACCAGAACACTAACAGACTGGTCTCACCT
2881 AGCGCAACTGCACGTGTGGATTCCCCCTCAACGTCCGAGGGGGCGCGACGCCGTCA
TCGCGTTACGTCACACCTAACGGGGGAGTTGCAGGCTCCCCCGCGCTGCAGCA
2941 CTTACTCATGTGTCGTACACCGACTCTGGTATTTGACATCACCAAATTGCTGCTGG
GAATGAGTACACACGACATGTGGGCTGAGACCATAAACTGTAGTGGTTAACGACGACCG
3001 CGTCTCGGACCCCTTGGATTCTCAAGCCAGTTGCTTAAGTACCCACTTGTGCG
GCAGAAGCCTGGGAAACCTAACAGAAGTTCGGTAAACGAATTATGGGATGAAACACGC
3061 CGTCCAAGGCCTTCTCCGGTTCTGCGCTTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAGGTTCGGAAAGAGGCCAACGCGCAATCGGCCCTACTAGCCTCCGGTAATGCA
3121 GCAAATGGTCATCATTAAGTTAGGGCGCTACTGGCACCTATGTTATAACCATCTCAC
CGTTTACCACTAGTAATTCAATCCCCGCAATGACCGTGGATACAAATATTGGTAGAGTG
3181 TCCTCTCGGGACTGGCGACAACGCTTGCAGATCTGGCGTGGCTGTAGAGCCAGT
AGGAGAAGCCTGACCGCGTGTGCGAACGCTCTAGACCGGACCGACATCTCGGTCA
3241 CGTCTCTCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACGCCGCGTGC
GCAGAAGAGGGTTTACCTCTGGTTGAGTAGTGCACCCCCGTCTATGGCGCGACGCC
3301 TGACATCATCAACGGCTGGCTGTTCCGCCCCGAGGGGCCGGAGATACTGCTGGGCC
ACTGTAGTAGTTGCCAACGGACAAGGGCGGGCTCCGGCTCTATGACGAGCCCG
3361 AGCGATGGAATGGCTCCAAGGGGTGGAGGTTGCTGGGCCATCACGGCTACGCCA
TCGGCTACCTTACCAAGAGGTTCCCACCTAACGACCGCGGGTAGTGGCGATGCGGGT
3421 GCAGACAAGGGGCCCTAGGGTGCATAATCACCAAGCTAACGGCCGGACAAAAACCA
CGTCTGTTCCCCGGAGGATCCCACGTATTAGTGGTGGATTGACCGGCCCTGTTTGGT
3481 AGTGGAGGGTGGAGGTCCAGATTGTGCAACTGCTGCCAACCTTCTGGCAACGTGC
ATCACCTCCACTCCAGGTCTAACACAGTTGACGACGGGTTGGAGGACCGTTGCACGTA
3541 CAATGGGGTGTGCTGGACTGCTACACCGGGCCGGAACGAGGACCATCGCTCACCAA
GTTACCCACACGACCTGACAGATGGTCCCCGGCTTGCTCTGGTAGCGCAGTGGTT
3601 GGGTCTGTATCCAGATGATACCAATGTAGACCAAGACCTTGTGGCTGGGCCGCTCC
CCCAGGACAGTAGGTCTACATATGGTACATCTGGTCTGGAACACCCGACGGGCGAGG
3661 GCAAGGTAGCCGCTATTGACACCCCTGCACTTGCCTGGCTCCTGGACCTTACCTGGTAC
GCTTCCATCGGCAGTAACGTGGGACGTGAACGCCAGGGAGCCTGGAAATGGACAGTG
3721 GAGGCACGCCGATGTCAATTCCGTGCGCCGGCGGGTGTAGCAGGGCAGCCTGCTGTC
CTCCGTGCGCTACAGTAAGGGCACGCCGCCCCACTATGTCCTGGACGACAG
3781 GCCCCGGCCCATTCCTACTTGAAGGCTCCTCGGGGGTCCGCTTGTGCCCCGG
CGGGGGCGGGTAAAGGATGAACCTTCCGAGGAGCCCCCAAGCGACAACACGGGGCGCC
3841 GCACGCCGTGGCATATTAGGGCCGCGGTGTGACCCGTGGAGTGGCTAACGGATAACT
CGTGCAGGCCACCCGTATAATCCGGCCTAACGTCGGACCTACCGATTCCGCCACCT
3901 CTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACT
GAAATAGGGACACCTCTGGATCTGTGGTACTCCAGGGGCCACAAGTGCCTATTGAG



FIG. 62G

3961 CTCTCCACCAAGTAGTGCCTCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCCACAGGCAG
GAGAGGTGGTCATCACGGGTCTGAAGGTCCACCGAGTGGAGGTACGAGGGTGTGCGTC
4021 CGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
GCCGTTTCTGTTCCAGGGCGACGTATACGTCAGTCCCATAATCCACGATCATGA
4081 CAACCCCTCTGTTGCTGCAACACTGGGCTTGGTCTTACATGTCACGGCTCATGGGAT
GTTGGGAGACAACGACGTTGTGACCCGAAACACGAATGTACAGGTTCCGAGTACCCCTA
4141 CGATCCTAACATCAGGACCCGGGTGAGAACAAATTACCAACTGGCAGCCCCATCACGTACTC
GCTAGGATTGAGTCTGGCCCACTCTGTTAATGGTGACCGTCGGGTAGTGCATGAG
4201 CACCTACGGCAAGTCCCTGCCGACGGCGGGTGCTCGGGGGCGTTATGACATAATAAT
GTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCAATACTGTATTATTA
4261 TTGTGACGAGTGCACCTCCACGGATGCCACATCCATCTTGGGATCGGCACTGTCCTTGA
AACACTGCTACGGTGAGGTGCTACGGTGTAGTAGAACCCGTAGCCGTACAGGAAC
4321 CCAAGCAGAGACTGCAGGGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTC
GGTTCGTTCTGACGCCCGCTGACCAACACGAGCGGTGGCGTGGGAGGCCCCGAG
4381 CGTCACTGTCCCCATCCAACATCGAGGAGGTGCTCTGTCACCCACCGGAGAGATCCC
GCAGTGACACGGGTAGGGTTGAGCTCTCCAACGAGACAGGTGGTGGCCTCTAGGG
4441 TTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTCTG
AAAAATGCCGTTCCGATAGGGGAGCTTCAATTAGTTCCCCCTCTGAGTAGTGAAGAC
4501 TCATTCAAAGAAGAAGTGCACGAACTCGCCGAAAGCTGGTGTGCAATTGGGATCAATGC
AGTAAGTTCTTCTTACGCTGCTTGGCGCTTCAACAGCGTAACCCGTAGTTACG
4561 CGTGGCCTACTACCGCGGTCTTGACGTGTCGTATCCCACCGGAGCGGGGATTTGTCGT
GCACCGGGATGATGGCGCAGAACTGCACAGGCACTAGGGCTGGTCGCCCTACAACAGCA
4621 CGTGGCAACCGATGCCCTCATGACCGGCTATACCGCGACTTCGACTCGGTGATAGACTG
GCACCGTTGGCTACGGGAGTACTGGCGATATGGCGCTGAAGCTGAGCCACTATCTGAC
4681 CAATACGTGTGTCACCCAGACAGTCGATTTCAGCCTGACCTACCTCACCAATTGAGAC
GTTATGCAACACAGTGGGTCTGTCAGCTAAAGTCGGAACGGGATGGAAGTGGTAACCTG
4741 AATCACGCTCCCCCAGGATGCTGTCCTCCGACTCACGTCGGGGCAGGACTGGCAGGGG
TTAGTGCAGGGGGTCTACGACAGAGGGCGTAGTTGAGCCCCGTCTGACCGTCCCC
4801 GAAGCCAGGCATCTACAGATTGTCGGCACCGGGGAGCGCCCTCCGGCATGTTGACTC
CTCGGTCCGTAGATGTCATAACACCGTGGCCCTCGCGGGAGGCGTACAAGCTGAG
4861 GTCCGTCCCTGTGAGTGTATGACGCAAGGTGCTTGGTATGAGCTACGCCGCCGA
CAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCAGGGGG
4921 GACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGCTCCCGTGTGCCAGGACCA
CTGATGTCATCCGATGTCGATGTAATTGGGGCCCGAAGGGCACACGGTCTGGT
4981 TCTTGAATTGGAGGGCGTCTTACAGGCCTCACTCATATAGATGCCACTTTCTATC
AGAACTTAAACCCCTCCGAGAAATGTCGGAGTGTAGTATCTACGGGTAAAGATAG
5041 CCAGACAAAGCAGAGTGGGAGAACCTCCTTACCTGGTAGCGTACCAAGCCACCGTGTG
GGTCTTCTGTCACCCCTTGGAGGAATGGACCATGCGATGGTTCGGTGGCACAC
5101 CGCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACAGATGTGGAAGTGTGTTGATTGCGCT
GGGATCCCGAGTTGGGGAGGGGTAGCACCCCTGGTACACCTCACAAACTAAGCGGA
5161 CAAGCCCACCCCTCCATGGGCAACACCCCTGCTATACAGACTGGCGCTGTTGAGAATGA
GTTCGGGTGGGAGGTACCCGGTGTGGGGACGATATGTCGACCCCGCAGAAGTCTTACT
5221 AATCACCTGACGCACCAAGTCACCAAATACATCATGACATGCGATGTCGGCCACCTGGA
TTAGTGGGACTGCGTGGGTAGTGGTTATGAGTACTGTCAGTACGTCAGCCGGCTGGACCT

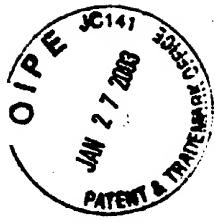


FIG. 62H

5281 GGTCTGTACGAGCACCTGGGTGCTCGTTGGCGCGTCTGGCTGCTTGGCCGCGTATTG
CCAGCAGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGCGCATAAC

5341 CCTGTCAACAGGGCTCGTGGTCAATGTTGGCAGGGTGTCTTGTCGGGAAGCCGGCAAT
GGACAGTTGTCCGACGCACCAAGTATCACCCGTCCAGCAGAACAGGCCCTCGGCCGTTA

5401 CATACTGACAGGGAGTCTCTACCGAGAGTTGATGAGATGGAAGAGTGCTCTCAGCA
GTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCAGGAGAGTCGT

5461 CTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAACGGCCCTCGG
GAATGGCATGTAGCTCGTCCCTACTACGAGCGGCTGTCAAGTTGTCTTCCGGGAGCC

5521 CCTCCTGCAGACCGCGTCCCGTCAGGAGAGGTTATGCCCTGCTGTCAAGACCAACTG
GGAGGACGTCTGGCGCAGGGCAGTCCGTCTCAATAGCGGGGACGACAGGTCTGGTTGAC

5581 GCAAAACTCGAGACCTCTGGCGAAGCATATGTGAACTTCATCAGTGGATAACAATA
CGTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTGAAGTAGTCACCCATGTTAT

5641 CTTGGCGGGCTTGTCAACGCTGCCTGTAACCCCGCATTGCTTCATTGATGGCTTTAC
GAACCGCCCGAACAGTTGCGACGGACCATTGGGCGGTAAAGAAGTAACCTACCGAAAATG

5701 AGCTGCTGTACCAAGCCCACTAACCACTAGCAAACCCCTCTTCACATATTGGGGGG
TCGACGACAGTGGTGGGGTATTGGTGTACGGTTGGGAGGAGAAGTTGTATAACCCCCC

5761 GTGGGTGGCTGCCAGCTCGCCGCCCCGGTGCCTGACTGCCTTGTGGCGCTGGCTT
CACCCACCGACGGGTCGAGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAA

5821 AGCTGGCGCCGCCATGGCAGTGTGACTGGGAAGGTCTCATAGACATCCTGAGG
TCGACCGCGGGCGGTAGCCGTACAACCTGACCCCTCAGGAGTATCTGTAGGAACGTCC

5881 GTATGGCGGGCGTGGCGGGAGCTTGTGGATTCAAGATCATGAGCGGTGAGGTCCC
CATACCGCGCCCGACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGG

5941 CTCCACGGAGGACCTGGTAATCTACTGCCGCCATCCTCTGCCGGAGCCCTCGTAGT
GAGGTGCCCTGGACCAAGTTAGATGACGGCGGTAGGAGAGCGGGCCTCGGGAGCATCA

6001 CGGCGTGGTCTGTGAGCAAACTACTGCCGCCACGTTGGCCGGGAGGGGGCAGTGC
GCCGACCAAGACACGTGTTATGACGGCGGTGCAACCGGGCCGCTCCCCGTACGT

6061 GTGGATGAACCGGCTGATAGCCTCGCCCTCCGGGGGAACCATGTTCCCCACGCACTA
CACCTACTGGCGACTATCGGAAGCGGAGGGCCCTGGTACAAAGGGGGTGCCTGAT

6121 CGTGCCGGAGAGCGATGCACTGCCCGTCACTGCCACTCAGCAGCCTCACTGAAAC
GCACGGCCTCTCGCTACGTCGACGGCGAGTGAAGGTATGAGTCGTCGGAGTGAATTG

6181 CCAGCTCTGAGGCAGCTGCACCAAGTGGATAAGCTGGAGTGTACCACTCCATGCTCCGG
GGTCGAGGACTCGCTGACGTGGTACCTATTGAGCCTCACATGGTGGAGTACGAGGCC

6241 TTCTGGTAAGGGACATCTGGACTGGATATGCGAGGTGTTGAGCGACTTAAAGACCTG
AAGGACCGATTCCCTGTAGACCCGTACCTATACGCTCCACAAACTCGCTGAAATTCTGGAC

6301 GCTAAAAGCTAAGCTCATGCCACAGCTGCCCTGGATCCCTTGTGTCCTGCCAGCGCGG
CGATTTGATTGAGTACGGTGTGACGGACCCTAGGGGAAACACAGGACGGTGCCTGCC

6361 GTATAAGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
CATATTCCCCAGACCGCTACCTGCCGTAGTACGTGTAGCGACGGTACACCTCGACT

6421 GATCACTGGACATGTCAAAACGGGACGATGAGGATGTCGGTCTAGGACCTGCAGGAA
CTAGTGACCTGTACAGTTTGCCCTGCTACTCCTAGCAGCCAGGATCTGGACGTCTT

6481 CATGTGGAGTGGACCTCCCCATTAAATGCCACACCAACGGGCCCTGTACCCCCCTCC
GTACACCTCACCTGGAAGGGTAATTACGGATGTGGTGCCTGGGGACATGGGGGGAGG

6541 TGCGCCGAACACTACGTTCGCGTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG
ACGGGCTTGATGTGCAAGCGCGATAACCTCCCACAGACGTCTCCTTACACCTCTATTG

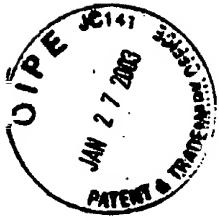


FIG. 62I

6601 GCAGGTGGGGACTTCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTG
CGTCCACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAGTTACGGGCAC
6661 CCAGGTCCCATGCCGAATTTTACAGAATTGGACGGGTGCGCCTACATAGGTTGC
GGTCCAGGGTAGCGGGCTTAAAAGTGTCTAACCTGCCACGGGATGTATCCAAACG
6721 GCCCCCTGCAAGCCTGCTCGGGAGGGAGGTATCATTAGAGTAGGACTCCACGAATA
CGGGGGACGTTGGAACGACGCCCTCCATAGTAAGTCTCATCCTGAGGTGCTTAT
6781 CCCGGTAGGGTCGCAATTACCTTGCAGGCCAACCGGACGTGGCGTGTGACGTCCAT
GGGCATCCCAGCTTAATGGAACGCTCGGCTGGCTGACCGGACAACTGCAGGTA
6841 GCTCACTGATCCCTCCATATAACAGCAGAGGCGCCGGCGAAGGTTGGCGAGGGGATC
CGAGTGACTAGGGAGGGTATATTGCGTCCGCCGGCGCTTCAACCGCTCCCTAG
6901 ACCCCCCCTGTGGCCAGCTCCTGGCTAGCCAGTATCGCTCCATCTCAAGGCAAC
TGGGGGGAGACACCGTCGAGGAGCCGATCGGTGATAGGCAGGTAGAGAGTTCCGTTG
6961 TTGACCGCTAACCATGACTCCCTGATGCTGAGCTATAGAGGCCAACCTCTATGGAG
AACGTGGCGATGGTACTGAGGGACTACGACTCGAGTATCTCGGTTGGAGGATACTC
7021 GCAGGAGATGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTATTCTGA
CGTCCTCTACCCGCCGTTGAGTCAGTCTTTGTTACCAACTAGTCTTTGTTACCAACTAAGACCT
7081 CTCTTCGATCCGTTGTGGCGAGGAGCGAGCCGGAGATCTCGTACCCGAGAAAT
GAGGAAGCTAGGCACACCCGCTCCTCGTCGCCCTAGAGGCATGGCGTCTTAA
7141 CCTCGGAAGTCTCGAGATTGCCAGGCCCTGCCGTTGGCGCGCCGGACTATAA
GGACGCCCTCAGAGCCTCTAACGCGGCTCGGGACGGCAAAACCCGCGCCGGCTGATATT
7201 CCCCCCGTAGGGAGACGTGGAAAAGCCGACTACGAACCACTGTGGTCCATGGCTG
GGGGGGCGATCACCTCTGACCTTTGGGCTGATGCTGGTGACACCAGGTACCGAC
7261 TCCGCTTCCACCTCCAAAGTCCCTCTGTGCCCTCCGCCCTGGAAGAAGCGGACGGTGGT
AGGCGAAGGTGGAGGTTAGGGAGGACACGGAGGCGAGCCTCTCGCCTGCCACCA
7321 CCTCACTGAATCAACCTATCTACTGCCCTGGCGAGCTGCCACCAAGAAGCTTGGCAG
GGAGTGACTTAGTTGGAGATAGATGACGGAACCGGCTCGAGCGGTGGTCTCGAAACCGTC
7381 CCTCAACTCCGGCATTACGGCGACAATACGACAACATCCTCTGAGCCGCCCTTC
GAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTAGGAGACTCGGGCGGGGAAG
7441 TGGCTCCCCCCCAGCTCGACGCTGAGTCCTATTCCCATGCCCTGGAGGGGA
ACCGACGGGGGGCTGAGGCTCGACTCAGGATAAGGAGGTACGGGGGACCTCCCCCT
7501 GCCTGGGGATCCGGATCTAGCGACGGGTATGGTCACCGTCAGTAGTGAGGCCAACGC
CGGACCCCTAGGCCTAGAACATCGCTGCCAGTACCGTCAGTCATCACTCGGTTGCG
7561 GGAGGATGTCGTGCTGCTCAATGCTTACTCTGGACAGCGCACTCGTCACCCCGT
CCTCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCGCGTGAGCAGTGGGAC
7621 CGCCGCGGAAGAACAGAAACTGCCATCAATGCACTAAGCAACTCGTTGCTACGTACCA
GCGCGCCCTTGTCTTGACGGGTAGTTACGTGATTGTTGAGCAACGATGCACTGGT
7681 CAATTGGTGTATTCCACCACTCACGCAGTGCTTGCACGGAGAAGAACGAG
GTTAAACACATAAGGTGGAGTGCCTCACGAAACGGTTCCGTCTTCAGTGTAA
7741 TGACAGACTGCAAGTTGGACAGCCATTACCGAGGTACTCAAGGAGGTAAAGCAGC
ACTGTCGACGTTCAAGACCTGTCGGTAATGGCTCTGCACTGAGTTCTCCAAATTGCG
7801 GGGCTCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTGCACTGCC
CCGAGTTTCACTCCGATTGAAACGATAGGCATCTCCTCGAACGTCGGACTGCGGGG
7861 ACACTCAGCAAATCCAAGTTGGTATGGGGAAAAGACGTCCGTTGCCATGCCAGAAA
TGTGAGTCGGTTAGGTTCAAACCAATACCCCGTTCTGCAAGGCAACGGTACGGTCTT



FIG. 62J

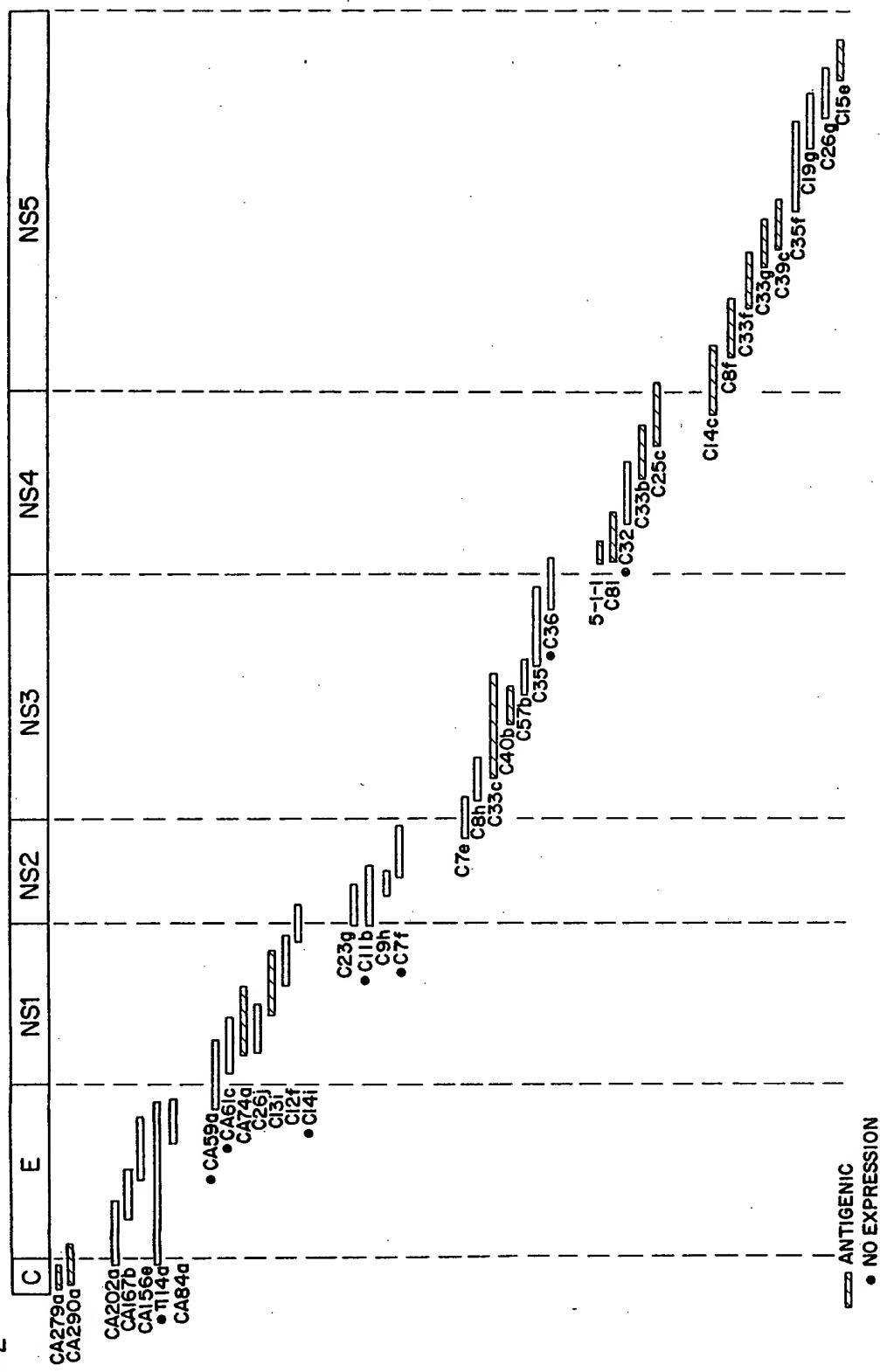
7921 GGCGTAACCCACATCAACTCCGTGTGAAAGACCTTCTGGAAGACAATGTAACACCAAT
CCGGCATTGGGTGTAGTTGAGGCACACCTTCTGGAAGACCTTCTGTTACATTGTGGTTA
7981 AGACACTACCATCATGGCTAAGAACGAGGTTTCTCGCTTCAGCCTGAGAAGGGGGTGC
TCTGTGATGGTAGTACCGATTCTGCTCCAAAAGACGCAAGTCGGACTCTTCCCCCAGC
8041 TAAGCCAGCTCGTCTCATCGTGTCCCCGATCTGGCGTGTGCGGTGTGCGAAAAGATGGC
ATTGGTGTGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTTACCG
8101 TTTGTACGACGTGGTTACAAAGCTCCCTTGGCGTGATGGGAAGCTCCTACGGATTCCA
AAACATGCTGCACCAATGTTCTGAGGGGAACCGGCACCTACCCCTCAGGTTCTTTGGGG
8161 ATACTCACCAAGGACAGCGGGTTGAATTCCCTCGTCAAGCGTGGAAAGTCCAAGAAAACCCC
TATGAGTGGTCTGTCGCCAACCTAACCTAGGAGCACGTTGACCTCAGGTTCTTTGGGG
8221 AATGGGGTTCTCGTATGATACCCGCTGTTGACTCCACAGTCACGTGAGAGCGACATCCG
TTACCCCAAGAGCATACTATGGCGACGAAACTGAGGTGTCAGTGAUTCTCGCTGTAGGC
8281 TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGGTGGCCATCAA
ATGCCCTCCTCCGTTAGATGGTACAAACACTGGAGCTGGGGGTCGGCGCACCGGTAGT
8341 GTCCCTCACCGAGAGGCTTATGTTGGGGGCCCTTACCAATTCAAGGGGGGAGAAGTGC
CAGGGAGTGGCTCTCGAAATACAACCCCGGGAGAATGGTTAAGTCCCCCTTTGAC
8401 CGGCTATCGCAGGTGCCCGCGAGCGCGTACTGACAACTAGCTGTGGTAACACCCCTCAC
GCCGATAGCGTCCACGGCGCGTCGCGCATGACTGTTGATCGACACCATTGTGGAGTG
8461 TTGCTACATCAAGGCCCGGCAGCCTGTCGAGCCGAGGGCTCCAGGACTGCACCATGCT
AACGATGTAGTCCGGGCCCCGTCGGACAGCTCGCGTCCGAGGTCTGACGTGGTACGA
8521 CGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGGGGGTCCAGGGAGGACGCCG
GCACACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGGTCTCTGCGCCG
8581 GAGCCTGAGAGCCTTACGGAGGCTATGACCAGGTACTCCGCCCCCTGGGGACCCCCC
CTCGGACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGGGGGGGGACCCCTGGGGGG
8641 ACAACCAGAATACGACTGGAGCTCATAACATCATGCTCCTCAACGTGTCAGTCGCCCA
TGTGGTCTTATGCTAACCTCGAGTATTGTAGTACGAGGAGGTTGACAGTCAGCGGGT
8701 CGACGGCGCTGGAAAGAGGGTCTACTACCTACCCGTGACCCCTACAACCCCCCTCGCGAG
GCTGCCCGCACCTTCTCCAGATGATGGAGTGGGACTGGATGTTGGGGGAGCGCCT
8761 AGCTCGTGGGAGACAGCAAGACACACTCCAGTCATTCTGGCTAGGCAACATAATCAT
TCGACGCACCCCTCTGTCGTTCTGTGAGGTCAAGTAAAGGACCGATCCGTTGATTAGTA
8821 GTTGCCCCACACTGTGGCGAGGATGACTGATGATGACCCATTCTTACGTCCTTAT
CAAACGGGGGTGTGACACCCGCTCCTACTATGACTACTGGTAAAGAAATCGCAGGAATA
8881 AGCCAGGGACCACTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCCAT
TCGGTCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCGGACGATGAGGTA
8941 AGAACCACTTGTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTCACT
TCTTGGTGAACTAGATGGAGGTTAGTAAGTTCTGAGGTACGGAGTCGGTAAAGTGA
9001 CCACAGTTACTCTCCAGGTGAAATTAAATAGGGTGGCCGATGCCCTCAGAAAACCTGGGGT
GGTCAATGAGAGGTCCACTTTAATTATCCCACCGCGTACGGAGTCGGTAAAGTGAACCCCA
9061 ACCGCCCTTGCGAGCTTGGAGACACCGGGCCGGAGCGTCCGCGCTAGGCTCTGGGAG
TGGCGGGAACGCTCGAACCTCTGTCGGCCGGCTCGCAGGCGCGATCCGAAGACCGGTC
9121 AGGAGGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAAGCT
TCCTCCGTCCCACGGTATACACCGTTCATGGAGAAGTTGACCCGTCAATTCTGTTTGA
9181 CAAAC
GTTT



12
12

FIG. 63

-COOH



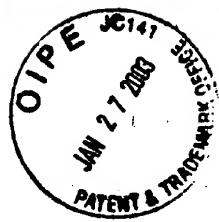
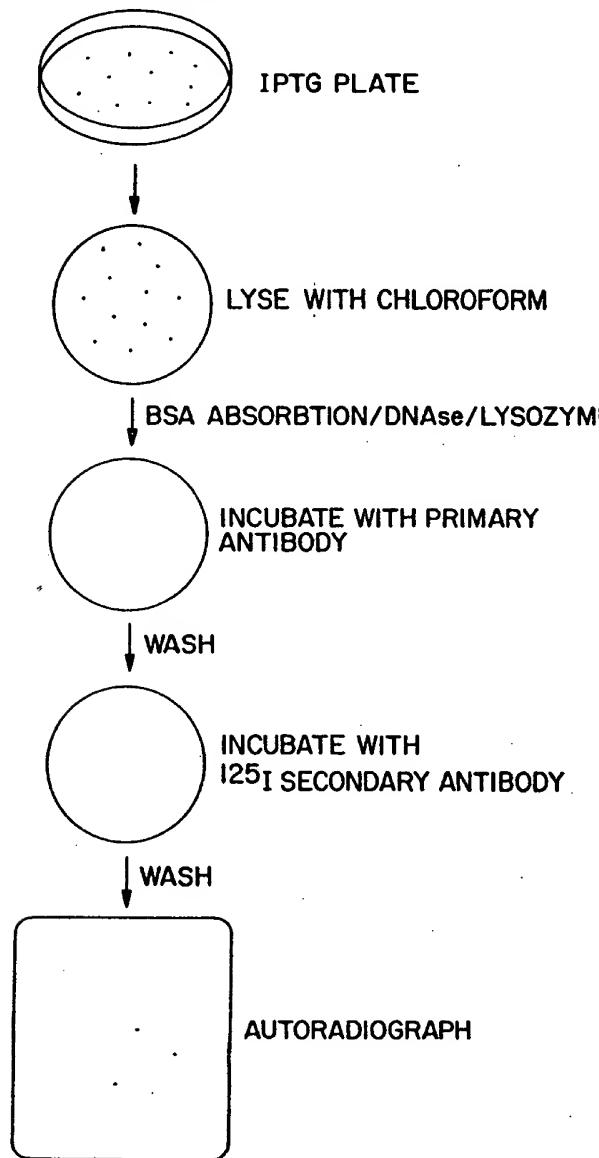
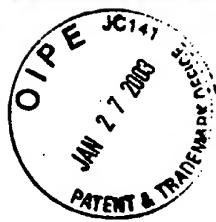


FIG. 64

TRANSFORM *E. coli* WITH RECOMBINANT PLASMIDS

(BLOT BACTERIA ON
↓
NITROCELLULOSE FILTER)





	CHIMPS	EXPRESSION LEVEL			CHRONIC HCV PATIENT C100 POSITIVE								CHRONIC HCV PATIENT C100 NEGATIVE								CONValesCENT C100 NEGATIVE					COMMUNITY AC				
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4	5			
		POST ACUTE			2. POST ACUTE			3. C100 CONVERSION			C100 POSITIVE			C100 NEGATIVE			C100 NEGATIVE			C100(+)			C100(+)			C100(-)			C100(-)	
SOD	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA259a	-	-	-	-	-	-	-	-	-	++	++	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA290a	-	-	-	-	-	-	-	-	-	++	++	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA202a	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA167a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA156C	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
π14a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA84a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA59a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA61C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA74a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C26j	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cl3i	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cl2f	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cl4i	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C23g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cl1b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C9h	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C7f	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C7e	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C8h	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C33c	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	+	-	-	±	+	+	-	±	+	-	±	-		
C40g	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	
C37b	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C35	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5-11	+	-	-	+	±	++	++	++	++	++	++	++	++	++	++	++	++	++	++	+	-	+	+	+	-	±	+	+		
C8i	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C33b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C25c	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cl4c	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cl8f	±	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C33f	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C33g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C39c	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C35f	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cl9g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C26g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cl5e	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

N.T. = EXPRESSION NOT TESTED

† THIS POLYPEPTIDE WAS NEGATIVE IN THIS
COLONY SCREEN BUT POSITIVE BY WESTERN
BLOD ANALYSIS

FIG. 65



FIG. 66A

R T

MSTNPKPQKKNKRNTNRRPQDVKFPGGQIVGGVYLLPRRGPRLGVRATR
KTTERSQRGRRQPIPKARRPEGRTWAQPGYPWPLYNEGCGWAGWLLSP-100
RGSRPSWGPTDPRRRSRNLGKVIDTLCGFADLMGYIPLVGAPLGGAAARA

T

LAHGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTVPASAYQVRNSTGL-200
YHVTNDCPNSSIVYEAADAILHTPGCVPCVREGNASRCWVAMTPTVATRD
GKLPATQLRRHIDLLVGSATLCSALYVGDLCGSVFLVGQLFTSPRRHWT-300

V

TQGCNCISIYPGHTGHRMAWDMMMNWSPTTALVMAQLLRIPQAILDMIAG
AHWGVLAGIAYFSMVGNWAKVLVLLLLFAGVDAETHVTGGSAGHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDNSLNTGWLAGLFYHHKFNSSS
GCPERLASCRPLTDFDQWGWPISYANGSGPDQRPYCWHYPPKPCGIVPAK-500
SVCGPVYCFTPSPVVVGTTDRSGAPTYSWGENDTDVFVNNNTRPPLGNWF
GCTWMNSTGFTKVCGAPPCVIGGAGNNLHCPTDCFRKHPDATYSRCGSG-600

I

PWLTPRCLVDYPYRLWHYPCTINYTIKFIRMYVGGVEHRLEAACNWTRGE
RCDLEDRDRSELSPLLLTTTQWQVLPCSFTLPASTGLIHLHQNIVDVQ-700
YLYGVGSSIASWAIKWEYVLLLFLLLADARVCSCLWMMLLISQAEAALEN
LVLNAASLAGTHGLVSFLVFFCFAWYLKGKWPVGAVYTFYGMWPLLLL-800

(N)

LALPQRAYALDTEVAASCGGVVVLVGLMALTLSPIYYKRYISWCLWWLQYFL
TRVEAQLHVWIPPLNVRGGRDAVILLMCAVHPTLVFDITKLLAVFGPLN-900
ILQASLLKVPYFVRVQGLLRFCALARKMIGHYYQMVIIKLGALTGTYYV
NHLTPLRDWAHNGLRLDAVAVEFVVFVFSQMETKLITWGADTAACGDIINGL-1000
PVSARRGREIILGPADGMVSKGWRLLAPITAYAQQTGRLLGCIITSLTGR
DKNQVEGEQIVVSTAQTTFATCINGVCWTYHGAGRTTIAASPCKGPVIQM-1100
YTNVDQDLVGWPAPQGSRSLLTCTCGSSDLYLVTRHADVIPVRRRGDSRG
SLLSPRPISYLGSSGGPLLCPAGHAVGIFRAAVCTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPVVPQSFQVAHLHAPTSGSKSTKVPAAAYAAQGYK

L

VLVLNPSVAATLGFGAYMSKAHGIDPNIRTGVRTITTGPSPITYSTYKFL-1300

ADGGCSGGAYDIIICDECHSTDATSLGIGTVLDQAETAGARLVLATAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEVIKGRHLIFCHSKKKC-1400
DELAAKLVALGINAVAYYRGLDVSIPTSGDVVVVATDALMTGYTGDFDS

Y

(S)

VIDCNTCVTQTVDFSLDPTFTIETITLPQDAVSRTQRRGRTGRGKPGIYR-1500
FVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNTPGLPV
CQDHLEFWEGVFTGLTHIDAHFLSQTKQSGENLPYLVAYQATVCARAQAP-1600
PPSWDQMWKCLIRLKPTLHGPTPLLYRLGAVQNEITLTHPVTKYIMTCMS
ADLEVVTSTWLVGGVLAALAAAYCLSTGCVVIVGRVVLSGKPAPIPDREV-1700
LYREFDEMEECSQHLPYIEQGMMLAEQFKQKQALGLLQTAQRQAEVIAPAV
QTNWQKLETFWAHKMWNFISGQIQLAGLSTLPGNPAPIASLMAFTAATSP-1800
LTTSQTLFNLGGWVAAQLAAPGAATAFGAGLAGAAIGSVGLGKVLID



FIG. 66B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVGVVCAA-1900

(HC)
ILRRHVGPGEHAVQWMNRLIAFASRGNHVSPTHYVPESDAAARVTAILSS
LTVTQLLRLHQWISSECTTPCSGSWLRDIWDWICEVLSDFKTLKAKLM-2000

(V)
PQLPGIPPFVSCQRGYKGVWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTFFPINAYTTGPCTPLPAPNYTFALWRVSAEYYVEIRQVGFH-2100
YVTGMTTDNLKCPHQVPSPEFFTELDGVRLHRFAPPCKPLLREEVSFRVG
LHEYPVGSQLPCEPEPDVAVLTSMLTDPSHITAEAGRRARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSPDAELIEANLWRQEMGGNITRVESENKV
VILDSFDPLVAEEDEREISVPAEILRKSRRFAQALPVWARPDYNPLVET-2300

S
WKKPDYEPPVVGCPPLPPPKSPPVPPPRKKRTVVLTESTLSTALAELATR

(FA)
SFGSSSTSGITGDNTTSSEPAKSGCPPDSDAESYSSMPPLEGEPGDPDL-2400
SDGSWSTVSSEANAEDVVCCSMSYSWTGALVTPCAEEQKLPINALNSL
LRHHNLVYSTTSRSACQRQKKVTFDRLQVLDHYQDVLKEVKAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSKFGYGAKDVRCHARAKAVTHINSWKDLLEDN
VTPIDTTIMAKNEVFCVQPEKGRKPARLIVFPDLGVRVCEKMALYDVVT-2600
KLPLAVMGSSYGFQYSPGQRVEFLVQAWKSKKTPMGFSYDRCFDSTVTE

(G)
SDIRTEEAIYQCCDLDPQARVAIKSLTERLYVGGPLTNSRGENCGYRRCR-2700
ASGVLTTSCGNTLTCYIKARAACRAAGLQDCTMLVCGDDLVVICESAGVQ
EDAASLRAFTEAMTRYSAPPGDPPQPEYDLELITSCSSNVSVAHDGAGKR-2800
VYYLTRDPTTPLARAAWETARHTFVNSWLGNIIMFAPTLWARMILMTHFF
SVL IARDQLEQALDCEIYGACYSIEPLDLPPIIQLRHGLSAFLHSYSPG-2900

G
EINRVAACLRKLGVPPLRAWRHRARSVRARLLARGGRAAICGKYLFNWA
RTKLK----- (Stop codon not yet reached)

() = Heterogeneity due to possible 5' or 3'
terminal cloning artefacts.



FIG. 67A

(1-500)

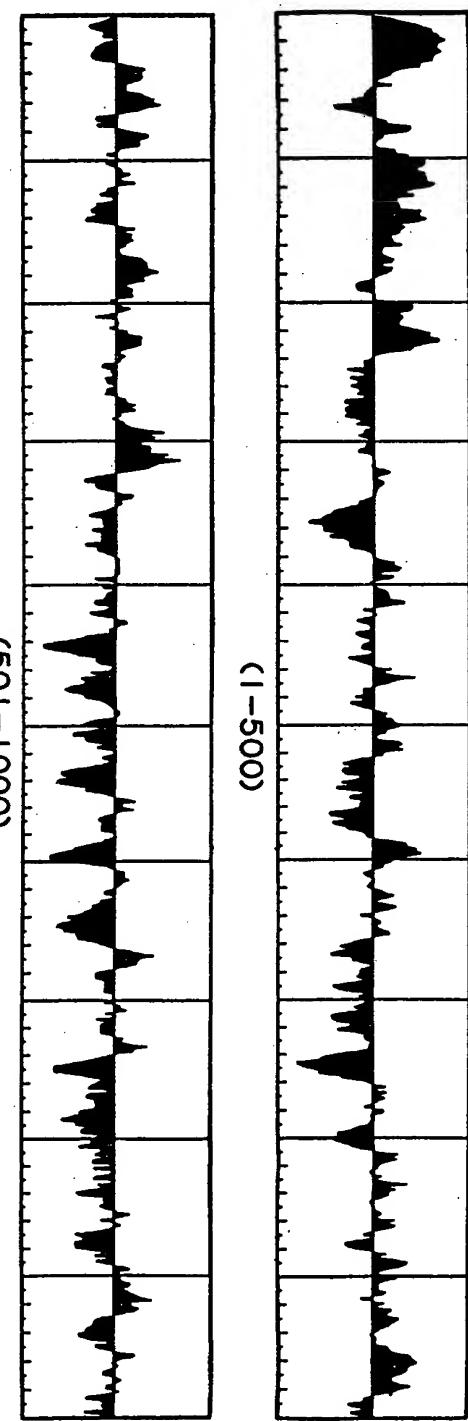


FIG. 67B

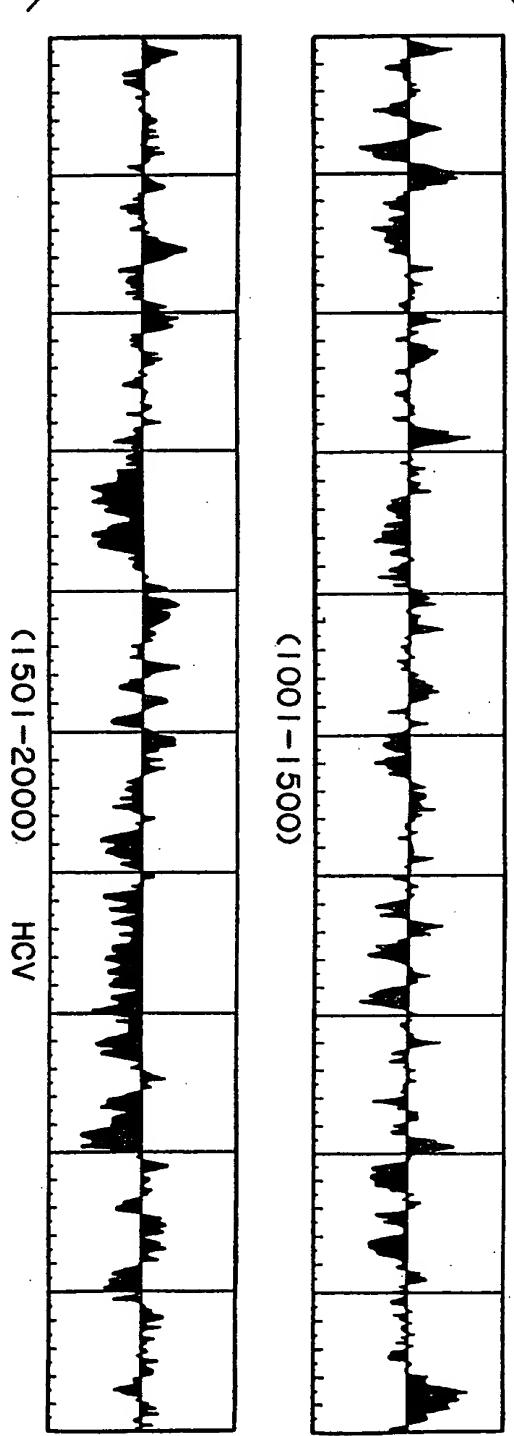




FIG. 67C

(2001-2500)

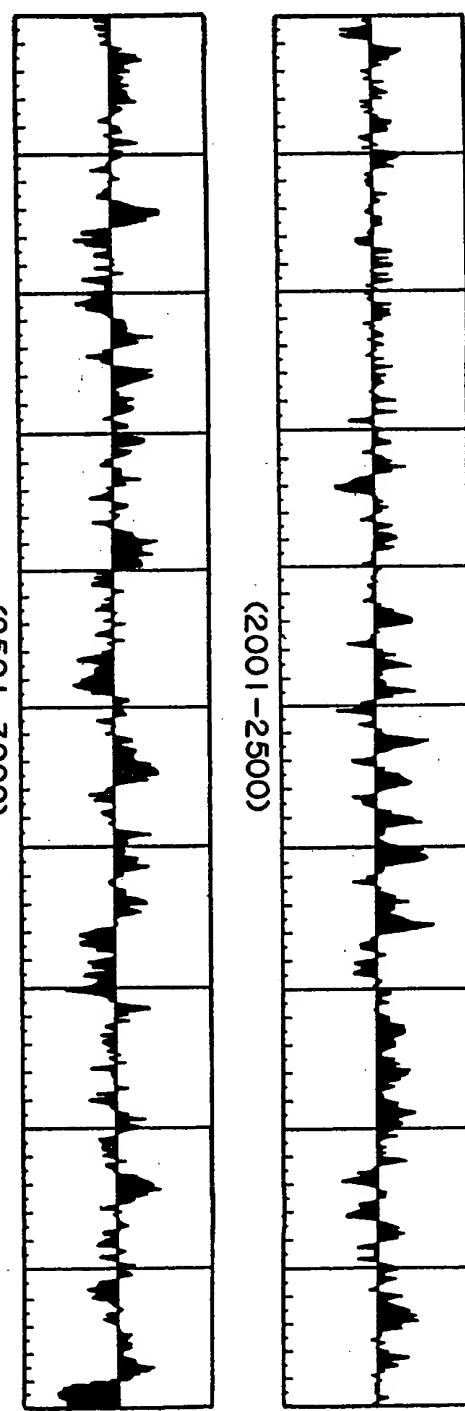
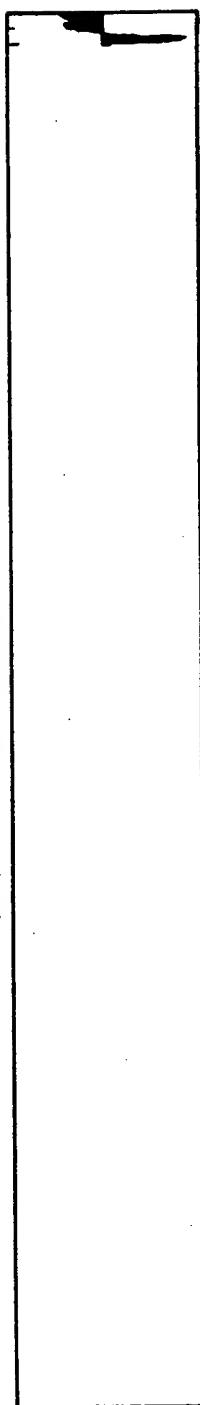


FIG. 67D

(3001-3011) HCV



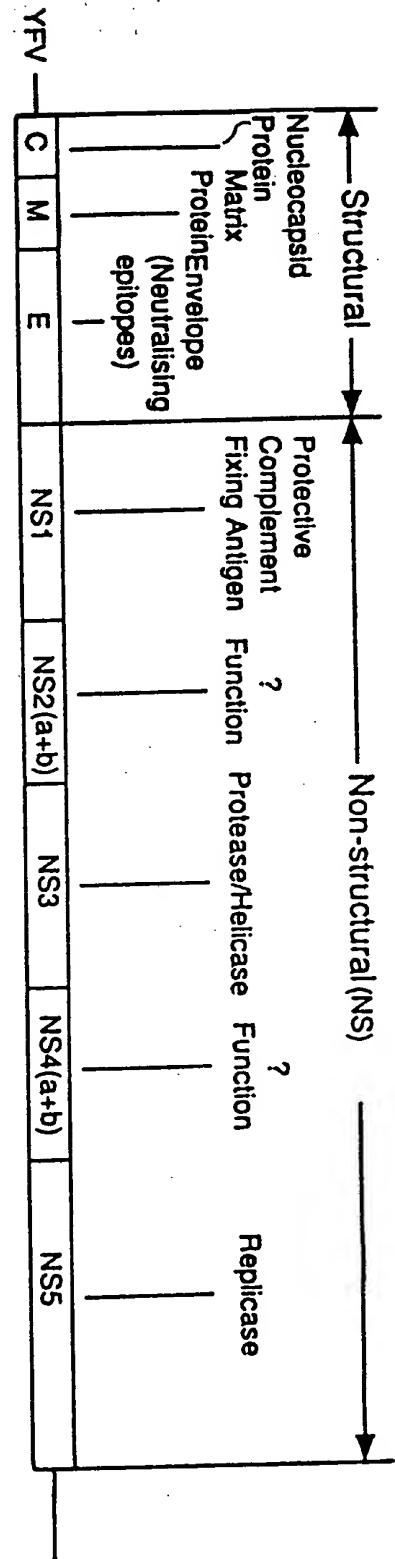


FIG. 69

□ 5-1-1



C100



FIG. 68

NS5
Highly-conserved
Polymerase
region

NS3 region

Flaviviruses (Yellow Fever, West Nile, Dengue) TATPPG-----SAAQRRGRIGRNP-----GDDCVV

HCV TATPPG-----SRTQRRGRTGRGK-----GDDLVV

#1348 #1483 #2737

***** * * * * ***

FIG. 73

5' CCGGGCAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTCGCCTCCGGGGAAAC 3'
3' CGCTCCCCGTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTG 5'

5' CATGTTTCCCCCTAATGAG 3'
3' GTACAAAGGGGGATTACTCAGC 5'

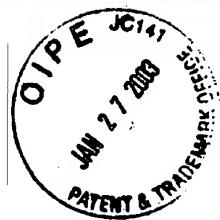
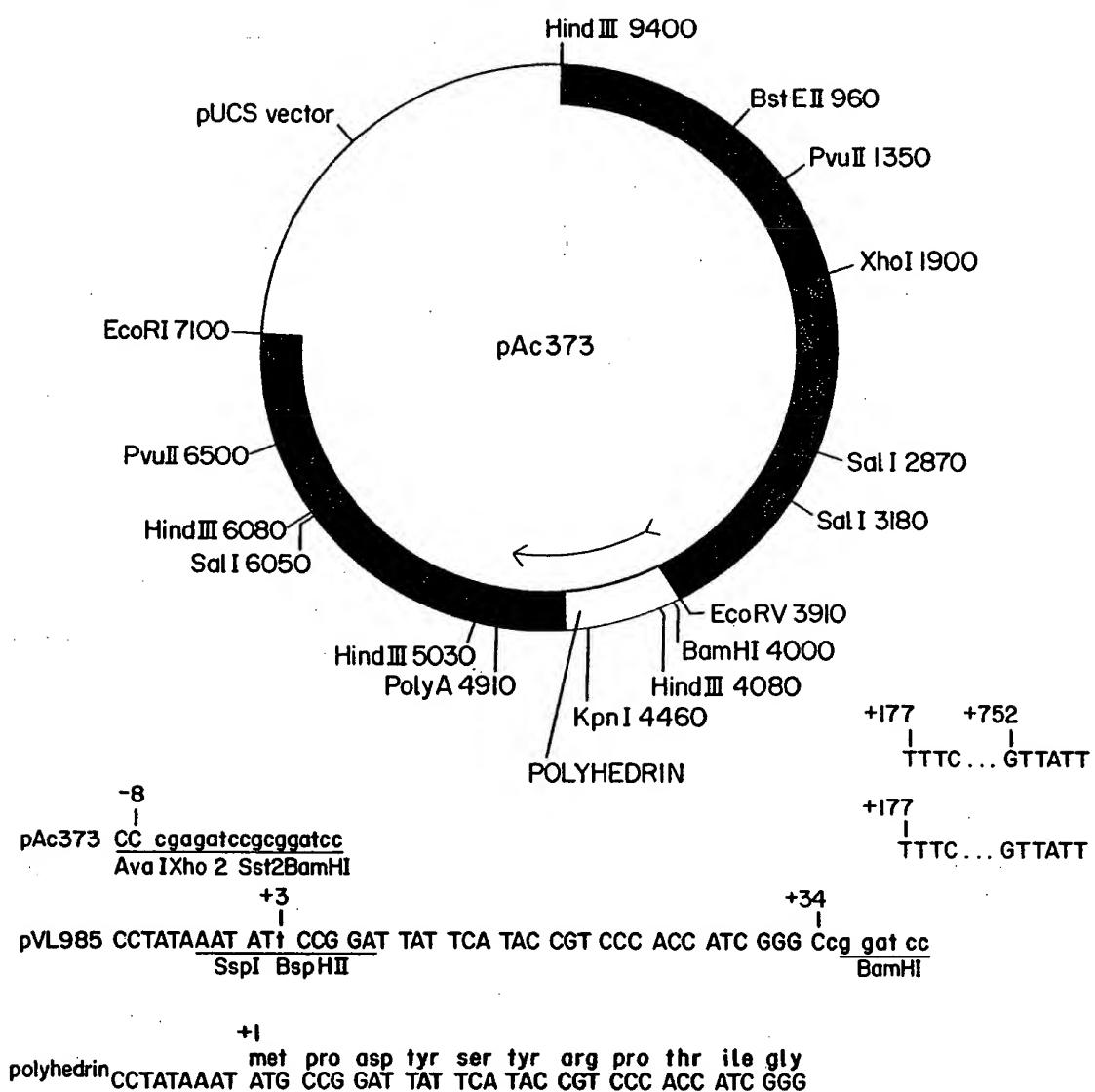


FIG. 70



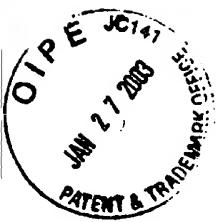


FIG. 71

Overlap with 16jh

1 GLYArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
GGCAGGGCTGCCATATGTCAGTACTCTCAACTGGCAGTAAGAACAAACTCAA
CCGTCCCCACGGTACACCGTTCATGGAGAAGTTGACCCGTCATTGTTGGAGTT

61 LeuThrProIleAlaAlaAlaIleGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
CTCACTCCAATAGCGGCCGCTGCCAGCTGGACTTGTCCGGCTGGTCACGGCTGGCTAC
GAGTGAGGTATCGCCGCCACCGGTGACCTGAACAGGCCACCAAGTGGCGACCGATG
SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
AGCGGGGGAGACATTATCACACGGTGTCTCATGCCGCCGCCGCTGGATCTGGTTTG
TCGCCCCCTCTGTAATAGTGTCCCACAGAGTACGGGGGGGGGACCTAGACCAAACG

181 CC
GG

FIG. 72A

1 MetSerThrAsnProLysProGlnArgLysThrLysArgAsnThrAsnArgArgProGln
ATGAGGCACGAAATCCTAAACCTCAAAAAAAACAAACGTAACACCAACCGTGGCCACAG
TACTCGTGCTTAGGATTGGAGTTTTTGTGTTGCAATTGTGGTTGGCAGCGGGTGTC
61 AspValIleSpheProGlyGlyGlyGlnIleValGlyGlyValTyrLeuLeuProArgArg
GACGGTCAAGTTCCGGGGGGGTGAGATCGTTGGAGTTACTTGTGGCCGGCAGG
CTGCAAGTTCAAGGGCCCACCGCCAGTCTAGCAACCACCTCAAATGAACACAGGGCGTCC

FIG. 72B

121 GLYProargGleuglyValargAlaThrarglyThrSerGluargSerGlnProargGly
GGCCTAGATGGGTGTGCGCGACGAGAAAGACTCCGAGCGGTGCAACCTCGGAGGT
CCGGATCTAACCCACACGCCGCGCTGCTTCTGAAGGCTCGCCAGCGTTGGAGCTCCA
181 ArgArgGlnProIleProLysAlaArgArgProGluGlyArgThrTrpAlaGlnProGly
AGACGTCAGCCTATCCCAAGGCTCGTGGCCCGAGGGCAGGACCTGGGCTCAGCCGG
TCTGCAGTCGGATAGGGTTCGGAGCAGCCGGTCCCTGGACCCGGAGTCGGGCC
TyrProTrpProLeuTyrglyAsnGluGlyCysGlyTrpAlaGlyTrpLeuLeuSerPro
241 TACCTCTGGCCCTCTATGGCAATGGGCTGGGGGGATGGCTCTCTCC
ATGGGAACGGGGAGATAACGTTACTCCCGACGCCACCCGCCCTACCGAGGACAGAGG
301 ArgGlySerArgProSerTrpGlyProThrAspProArgArgSerArgAsnIleGly
CGTGGCTCGGCCTAGCTGGGGCCCACAGCCCCGGCTAGGTGGCAATTGGGT
GCACCGAGAGCCGGATCGACCCCCGGGTCTGGGGCCGCATCCAGCGCGTTAACCA
361 LysValIleAspPheLeuThrCysGlyPheAlaAspLeuMetGlyTyrlleProIleVal
AAGGTCATCGATAACCTTACGTCGGCTTCGCCGACCTCATGGGTACATACCGCTCGTC
TTCCAGTAGCTATGGGAATGCAACGCCGAAGCGGGCTGGAGTACCCCATGTATGGGGCAG
GLYAlaProLeuGlyGlyAlaAlaArgAlaLeuAlaHisGlyValArgValLeuGluAsp
421 GGCCTCTGGGGCGCTGCCAGGGCTGGCGCATGGCTCCGGTTCTGGAGAC
CCGGGGGAGAACCTCCGGACGGTCCCCGGACCGCGTACCGCAGGCCAACACCTCTG



FIG. 72C

481 GLYValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPheSerIlePheLeuLeuAla
GGCGTGAACATGCAACAGGAAACCTTCCTGGTTGCTCTTCTCTATCTTCCTCTGGCC
CCGCACTTGATACTGTTGCCATTGGAGGACCAACGAGAAAGAGATAGAAGGAAGGACCGG
LeuLeuSerCysLeuThrValProAlaSerAlaSerAlaTyrGlnValArgAsnSerThrGlyLeu
541 CTGCTCTTGCTTGACTGTTGCCCTCGGCCTACCAAGTGGCAACTCCACGGGCTT
GACGAGAGAACGAACTGACACAGGGGAAGCCGGATGGTTCACGGTTGAGGTGCCGGAA
TyrHisValThrAsnAspCysProAsnSerSerIleValTyrGluAlaAlaAspAlaIle
601 TACACACGTCAACCAATGATGCCCTAACCTCGAGTATTGTGTACGGAGGCCGATGCCATC
ATGGTGCAAGTGGTTACTAACGGATTGAGCTCATAACACATGCTCCGGGGCTACGGTAG
LeuHistThrProGlyCysValProCysValArgGluGlyAsnAlaSerArgCysTrpVal
661 CTGCACACTCCGGGGTGCCTCCCTGGTTGGGGCAACGCCCTCGAGGTGTTGGGTG
GACGTGTGAGGCCAACGGCAAGCGCAACTCCCCTGGGAGCTCCACACCCAC
AlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThrGlnLeuArgArg
721 GCGATGACCCCTACGGTGGCCACCAGGGATGGCAACTCCCCGGGACGCCAGCTTCGACGT
CGCTACTGGGGATGCCACCGGGTGGCTCCCTACCGTTTGAGGGGGCTGGCTCGAAGCTGCA
HisIleAspLeuLeuValGlySerAlaThrLeuCysSerSerAlaLeuThrValGlyAspLeu
781 CACATCGATCTGCTTGTCGGGAGGCCACCCCTCTGTTGGGGACCT
GTGTTAGCTAGACGAACAGGCCCTCGGGGGAGACAAGCCGGAGATGCCACCCCTGGAC
CysGlySerValPheLeuValGlyGlnLeuPheThrPheSerProArgArgHisTrpThr
841 TGCGGGTCTGTCTTCTGTGGCCAACCTGTCACCTCTCCCAGGGGCCACTGGACG
ACGGCCCAGAGAAACAGCCGGTTGACAAGTGGAGAGAGGGTCCGGGTGACCTGC



FIG. 72D

ThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArgMetAlaTrp
901 ACGCAAGGTTGCAATTGCTCTATCTATCCGCCATATAACGGTCACGCCATGGCATGG
TGCCTTCAAACGTTAACGAGATAGATAGGGCCGGTATATGCCAGTGGCTACCGTACCC
AspMetMetMetAsnTrpSerProThrThrAlaLeuValMetAlaGlnIleLeuArgIle
961 GATATGATGATGAACTGGTCCCTACGACGGCTTGGTAATGGCTCAGCTGCTCCGGATC
CTATACTACTACTTGACCAGGGATGCTGCCGCAACCAATTACCGAGTGGACGGCCTAG
1021 ProGlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGlyValLeuAlaGlyIleAla
CCACAAGCCATCTGGACATGATCGCTGGTGCCTACTGGGACTGGCTGGGGCATAGCG
GGTGTTCGGTAGAACCTGTACTAGCCGACCACGAGTGAACCCCTCAGGACGCCGCTACCG
1081 TyrPheSerMetValGlyAsnTrpAlaLysValLeuValValLeuLeuPheAlaGly
TATTCTCCATGGTGGGAACCTGGGGAAGGTCTGGTAGTGCTGCTGCTATTGGCCGGC
ATAAAGAGGTACCAACCCCTTGACCCGCTTCCAGGACCATCACGACGACGATAAACGGCCG
ValAspAlaGluThrHisValThrGlyGlySerAlaGlyHisThrValSerGlyPheVal
1141 GTCGACGGAAACCCACGTCACCGGGGAAGTGCCGCCACACTGTTGCTGGATTGTT
CAGCTGCGCCCTTGGGTGCACTGGCCCTTCACGGCCGGTGTGACACAGACCTAACAA
SerIleLeuAlaProGlyAlaLysGlnAsnValGlnIleLeuAsnThrAsnGlySerTrp
1201 AGCCTCCCTCGCACCCAGGCCAACGCAACGGTCCAGCTGATCACACACCAACGGCAGTGG
TCGGAGGAGCGTGGTCCGGCTTCGTCAGGGTCCACTAGTTGCTGGTTGCCGTCACC



FIG. 72E

HisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsnThrGlyTrpLeuAlaGly
1261 CACCTCAATAGCACGGCCCTGAACTGCAATGATGCCACACACGGCTGGTTGGCAGGG
GTGGAGTTATCGTGGCCGGACTTGACGTTACTATCGGAGTTGGCCGACCAACCGTCCC
LeuPheTyrHisLysPheAsnSerSerGlyCysProGluargLeuAlaSerCysArg
1321 CTTTCTATCACCAAGTCAACTCTCAGGCTGTCTGAGAGGCTAGCCAGCAGACTCTCCGATCGGTGGCT
GAAAGATAGTTGGTTCAGTTGAGAAGTCCGACAGGACTCTCCGATCGGTGGCT
ProLeuThrAspPheAspGlyTrpGlyProLeuSerThrAlaAsnGlySerGlyPro
1381 CCCCTTACCGATTTCGACCAAGGCTGGGCTGGGCTATCAGTTATGCCAACGGAGGGCCC
GGGGAATGGCTAAACTGGTCCCAGCCCCGGATAGTCATAAGGTTGCCCTCGCCGGGG
AspGlnArgProTyrCysTrpHistYrProProLysProCysGlyIleValProAlaLys
1441 GACCAAGCGCCCTACTGCTGGCACTACCCCCAAACCTGGGTATGGCCCGGAAG
CTGGTCTGGGGATGACCGACCGTGATGGGGTTTGAACGCCATAACACGGGCCTTC
SerValCysGlyProValTyrCysPheThrProSerProValValValGlyThrThrAsp
1501 AGTGTGTGGTCCGGTATATTGCTTCACTCCCCAGCCCCGGTGGGGAACGACCGAC
TCACACACACCAGGCCATATAACGAAGTGGAGGGTCGGGGCACCAACCCCTGGCTGGCTG
ArgSerGlyAlaProThrTyrSerTrpGlyGluAsnAspThrPheValPheValLeuAsn
1561 AGGTCTGGGGCGGCCACCTACAGCTGGGTGAAATGATAACGGACGTCTCGTCCTAAC
TCCAGCCCCGGGGATGTCGACCCCACTTTACTATGCCAGAAGCAGGAATTG



FIG. 72F

1621 AsnThrArgProProLeuGlyAsnTrpPheGlyCysthrTrpMetAsnSerThrGlyPhe
 AATACCAGGCCACCGCTGGCAATTGGTCGGTTGACTCAACTGGATT
 TTATGGTCCGGTGGGACCCGTTAACCAAGCCAAACATGGACCTACTTGAGTTGACCTAAG

1681 ThrLysValCysGlyAlaProProCysValIleGlyGlyAlaGlyAsnAsnThrLeuHis
 ACCAAAGTGTGGGAGCCCTCCCTGTCATCGGAGGGGCAACACACCCCTGCAC
 TGGTTCAACACGCCCTCGCGGAGGAACACAGTAGCCTCCCCGCCGTGTTGGACGTG

1741 CysProThrAspCysPheArgLysHisProAspAlaThrTyrSerArgCysGlySerGly
 TGCCTCACTGATTGCTTCCGCAAGCATCGGACGCCACATACTCTCGGTGCGCTCCGGT
 ACGGGTGACTAACGAAGGGCTTCGTAGGCCCTGGGGTATGAGGCCACGCCGAGGCCA

1801 ProTrpLeuThrProArgCysLeuValAspTyrProTyrArgLeuTrpHistYrProCys
 CCCTGGATCACACCCAGGTGCCCTGGTCACTACCGTATAGGCTTGGCATTATCCTTG
 GGGACCTAGTGTGGGCCACGGGACCGCTGATGGCATATCCGAAACCGTAATAGGAACA

1861 ThrIleAsnTyrThrIlePhelysIleArgMetTyrValGlyGlyValGluHisArgLeu
 ACCATCAACTACACCATATTAAATCAGGATGTACGTGGAGGGTGGAACACAGGCTG
 TGGTAGTTGATGTGGTATAAATTAGTCCTACATGCACCCCTCCCCAGCTTGTGTCGAC

1921 GluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSer
 GAAGCTGCCTGCAACTGGACGCCGGGGAACGTTGGATCTGGAAAGACAGGGACAGGTCC
 CTCGACGGACGTTGACCTGGGCCCCGCTGCAACGCTAGACCTTCTGTCCCTGTCCAGG

1981 GluIleSerProLeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThr
 GAGCTCAGCCCCGTACTGCTGACCACTACACAGTGGCAGGTCCCTCCGTGTTCCCTCAC
 CTCGAGTCGGGCAATGACGACTGGTGATGTGTCACCGTCCAGGGGACAAGGAAGTGT



FIG. 72G

ThrLeuProAlaLeuSerThrGlyLeuLeuHisLeuHisGlnAsnLeuValAspValGln
2041 ACCCTACCAGCCTTGTCACCGGCCTCATCCACCTCCACAGAACATGGACGGCGAG
TGGATGGTCGGAAACAGGTGGGGAGTAGGTGGAGGTCTGTAACACCTGGCACGTC
2101 TyrLeuTyrglyValGlySerSerIleAlaSerTrpAlaLeuLeuLysTrpGlutYrValVal
TAC'TGTACGGGCTGGGTCAAGCATGGGTCTGGCCATTAGTGGAGTACGTCGTT
ATGAAACATGCCAACCCAGTCGTAGCCAGGACCCGGTAATTACACCCATGCGCAA
2161 LeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeu
CTCTGTTCCTCTGCTTGAGACGCCGCCGCTCTGCTCTGCTTGCTGCTACTC
GAGGACAAGGAAGACGAACGTCAGCGCGCGCAGACGAGGACGAACACCTACTACGATGAG
2221 IleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerIleAla
ATATCCCCAAGGGAGGGGGCTTGAGAACCTCGTAATACTTAATGCGACATCCCTGGCC
TATAGGGTTCGCCTCCGCCAACACCTCTGGAGCATTATGAATTACGTCGTAGGGACCGG
2281 GlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrpTyrlLeuLysGly
GGGACGCGACGGTCTGTATCCTCCTCGTGTCTCTGCTTGATGGTATTGAGGGT
CCCTGCGTGGCCAGAACATAGGAAGGAGCACAGAACGGAAACGTACCAAACTCCCA
2341 LysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeuLeuLeuLeu
AAGTGGGTGGCCGGAGCGGGTCTACACCTCTACGGGATGTGGCCTCTCCCTGCTCCTG
TTCAACCCACGGGCCTCGCCAGATGTGGAGATGCCCTACACCGGAGAGGAGCAGGAG
GAC



FIG. 72H

LeuAlaLeuProGlnargAlaTyralaLeuaspThrGluValalaAlaSerCysGlyGly
2401 TTGGCGTGGCCAGGGGGTACGGCTGGACACGGAGGTGGCCGTCGGTGGCGT
AACCGCAACGGGTGCCCCCATGCCGACCTGTGCCCTCCACCGGGCAGCACCGCCA
ValValLeuValGlyLeuMetAlaLeuSerProTyrrLysArgTyrrileSer
2461 GTTGTCTCGTCGGGTGATGGCGCTGACTCTGTACCATATTACAAGCGCTATATCAGC
CAACAAGAGCAGCCCAACTACCGCGACTGAGACAGTGGTATAATGTCGGATATAGTC
TrpCysLeuTrpTrpIleGlnTrpLeuThrArgValGluAlaGlnLeuHisValTrp
2521 TGGTGTGGTGGCTTCAGTATTCTGACCCAGAGTGGAAAGGCCACTGCACTGTTGG
ACCAACGAAACACCACCGAAGTCATAAAAGACTGGTCTCACCTTCGGCTGACGTGACACC
IleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuMetCysAlaVal
2581 ATCCCCCCTCAAGTCCGGAGGGGGCCACGCCGTCATCTTACTCATGTTGCTGTA
TAAGGGGGAGTTGCAGGGCTCCCCCGCGCTGGGCAGTAGAATGAGTACACACGACAT
HisProThrLeuValPheAspIleThrLysLeuLeuAlaValPheGlyProLeuTrp
2641 CACCCGACTCTGGTATTGACATACCAATGCTGCTGGCCGCTCTGGGACCCCTTGG
GTGGCTGAGACCATAAACTGTTAACGACGCCAGAACCCCTGGGAACCC
IleLeuGlnAlaSerLeuLeuLysValProTyrrPheValArgValGlnGlyLeuLeuArg
2701 ATCTTCAAGCCAGTTGCTTAAGTACCCCTACTTGTGGCGTCCAGGCCTCTCCGG
TAGAAGTTCGGTCAAACGAAATTCTATGGGATGAAACACGCCAGGTCCGGAAAGAGGCC



FIG. 72

PheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMetValIleLeuLys
2761 TTCTGCCGCTTAGGCCGGAAGATGATCGGAGGCCATTACGTGCAAATGGTCATCATTAG
AAGACGCCAATCGCGCTTACTAGCCTCCGGTAATGCCACGTTACCACTAGTAATT
LeuGlyAlaLeuThrGlyThrTyrValTyrValAsnHisLeuThrProLeuArgAspTrpAla
2821 TTAGGGCGCTACTGGCACCTATGTTAACCATCTCACTCTCTGGACTGGCG
AATCCCGCGAATGACCGTGGATAACAATATGGTAGAGTAGGTGAGGAAGGCCCTGACCCGC
HisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGlnMetGlu
2881 CACAAACGGCTTGCGAGATCTGGCCGTGGCTGTAGAGCCAGTCGGTCTCTCCAAATGGAG
GTGTTGCCGAACGGCTCTAGACCCGGCACCGACATCTCGGTCAAGCAGAAGAGGGTTACCTC
ThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGlyAspLeuAsnGlyLeu
2941 ACCAAGCTCATCAGGTGGGGCAGATAACCGCCGCGTGGCGTGCACATCATCAACGGCTTG
TGGTTCGAGTAGTGCACCCCCGTCTATGGGGGCCACGCCACTGTAGTAGTTGCCGAAC
ProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSer
3001 CCTGTTCCGGCCGAGGGGGGGAGATACTGCTCGGCCAGCCGATGGAATGGTCTCC
GGACAAAGGGGGGGTCCCCGGCCCTATGACCGAGCCGGTGGCTACCTTACAGAGG
LysGlyTrpArgLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeu
3061 AAGGGGTGGAGGTTGCTGGGCCCATCACGGGTACGCCAGCAGACAAGGGCCTCCTA
TTCCCCACCTCCAAAGACCGGGGTAGTGCCGCATGCCGTCTGTTCGGGAGGAT
GlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGln
3121 GGGTGCATAATCACAGCCTAACTGGCCGGACAAACCAAGTGGAGGGTGGAGTCAG
CCCACGTATTAGTGGTGGATTGACCCGGCCCTGTTTGGTTCACCTCCACTCCAGGTC



FIG. 72J

IleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThr
3181 ATGGTGTCACTGCTGCCAACCTCTGGCAACGTGCATCATGGGTGTGCTGGACT
TAACACAGTGTGACGAGGTTGGAGGACCATCGCGTCACCGTAGTTACCCACACGACCTGA
3241 ValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMet
GTCTTACACGGGGCCGAACGAGGACATCGCGTCACCCAAGGGTCTGTCACTCCAGATG
CAGATGGTCCCCGGCTTGCTCCTGGTAGCGCAGTGGTTCCAGGACAGTAGGTCTAC
3301 TyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeu
TATACCAATGTAGACCAAGAACCTTGTTGGCTGGCCGCTCCGCAAGGTAGCCGCTCATGG
ATATGGTTACATCTGGTTCTGGAACACCCGACCGGGGAGGGCGTTCCATCGCGAGTAAC
3361 ThrProCysThrCysGlySerSerAspLeuThrLeuValThrArgHisAlaAspValIle
ACACCCCTGCACTTGGGCTCTCGGACCTTACCTGTCACGGGACGCCGATGTCATT
TGTGGGACGCTGAACGCCGAGGAGCCTGGAATGGACCAAGTGTCTCCGTGGCTACAGTAA
3421 ProValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyr
CCCGTGGCCCCGGGGTGATAGCAGGGCAGCCTGCTGTGCCCCGGCCATTCTAC
GGCACGCCGCCCACTATCGTCCCCGTGGACAGCGGGGGGTAAGGATG
LeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePhe
3481 TTGAAAGGCTCTGGGGGTCCGCTGTTGGCCCGGGGACGCCGTTGGCATATT
AACTTCCGAGGAGCCCCCAGGCAGACAACACGGGGCCCCCTGGGGCACCCGTATAAA
ArgAlaAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsn
3541 AGGGCCGGGTGTGACCCGGTGGAGTGGCTAAGGGGGTGGACTTTATCCCTGTGGAGAAC
TCCGGCGCCACACGGGGCACCTCACCGATCCGCCACCTGAATAAGGACACCTCTG



FIG. 72K

LeuGluThrThrMetArgSerProValPheThrAspSerSerProProValPro
3601 CTAGAGACACCATGAGGTCCCCGGTGTCAACGGATAACTCCTCCACCACTGAGTC
GATCTCTGTGGTACTCCAGGGGCCACAAGTGCCATTGAGGAGGGTGTCAACGGG
GlnSerPheGlnValAlaHisLeuHisAlaProThrGlySerGlyLysSerThrLysVal
3661 CAGAGCTTCAGGTGGCTCACCTCCATGCTCCCACAGGCAGCGCAAAGCACCAAGGTC
GTCTCGAAGGTCCACCGAGGTGGAGGTACGAGGGTGTCCGCGCTTCGTTGTTCCAG
ProAlaAlaTyrAlaAlaGlnGlyTyrLysValleuValleuAsnProSerValAlaAla
3721 CGCGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAACCCCTCTGTGCTGCA
GGCCGACGTATACGTCGAGTCCCGATATTCCACGATCATGAGTTGGGAGACAACGACGT

ThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThr
3781 ACACTGGGCTTGGTGCCTACATGTCACAGGCTCATGGATCGATCCTAACATCAGGACC
TGTGACCCGAAACCAACCGAATGTCAGGTTCCGAGTACCCCTAGCTAGTAGGTGTTGCTGG
GlyValArgThrIleThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeu
3841 GGGGTGAGAACAAATACCAACTGGCAGCCCCATCACGTAACCTACGGCAAGTTCC
CCCACTCTGTAAATGGTGACCGTGGGGTAGTGCAATGAGGTGGATGCCGTTCAAGGA
AlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleCysAspGluCysHisSer
3901 GCGGACGGGGGTGCTGGGGGGCGCTTATGACATAATAATTGTGACGAGTGCCACTCC
CGGCTGCCGCCACGAGCCCCCGGAATACTGTATTAAACACACTGCTCACGGTGAGG



FIG. 72L

ThraspalaThrSerIleLeuGlyIleGlyThrValLeuaspGlnalaGlutThrAlaGly
3961 ACGGATGCCACATCCATCTGGCATCGGCACTGCTTGACCAAGCAGAGACTGGTTCGTCTGACGCC
TGCTACGGGTGTAGGTAGAACCGTAGCCGTGACAGGA
AlaargLeuValValLeuAlaThrAlaThrProProGlySerValThrValProhisPro
4021 GCGAGACTGGTTGGCTCGCCACCGCACCCCTCCGGCTCCGCACTGTGCCCCATCCC
CGCTCTGACCAACACGAGCGGTGGGGAGGCCCGAGGGCAGTGACACGGGTAGGG
AsnIleGluGluValAlaLeuSerThrThrGlyGluIleProheTyrglyLysAlaIle
4081 AACATCGAGGAGGTGCTCTGTCCACCAACGGAGAGATCCCTTTACGGCAAGGCTATC
TTGGCTCCTCCAAACGAGACAGGTGGTGGCCTCTAGGGAAAAATGCCGTTCCGATAG
ProLeuGluValIleIleLysGlyGlyArgHisLeuIlePheCysHisSerIleLysLysCys
4141 CCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTCTGTCAATTCAAAGAAGAGTGC
GGGAGCTTCATTAGTCCCCCCTCTGTAGAGTAGAGACAGTAAGTTCTCTCAGG
AspGluIleuIleAlaIleLysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGly
4201 GACGAACCTGCCGCAAAGCTGGTCGATGGCATCATGCCGTGGCTACTACCGCGGT
CTGCTTGAGGGGGTTTCGACCCAGGTAACCCGTAGTTACGGCACCGGATGATGGCGCCA
LeuAspValSerValIleProThrSerGlyAspValValValAlaThrAspAlaLeu
4261 CTTGACGCTGTCGCTCATCCCGACCAAGGGGATGTTGTCGTGGCACCGATGCCCTC
GAAGTCACAGGCACTAGGGCTGGTCGCCGCTACAAACAGCAGCACCGTGGCTACGGGAG

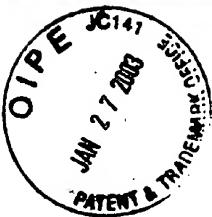


FIG. 72M

MetThrGlyTyrThrGlyAspPheAspSerValLeuAspCysAsnThrCysValThrGln
4321 ATGACCGGCTATAACGGGCGACTTCGACATCGGATAGACACTGCAATACGGTGTCAACCGAG
TACTGGCCGATATGGCCGCTGGAGCTGACGTTATGCACAGGGTC

ThrValAspPheSerLeuAspProThrPheThrleuProGlnAsp
4381 ACAGTCGATTTCAGCCTGACCTACCTTACCATGGACAATCACGCTCCCCAGGAT
TGTCACTAAAGTCGGAACCTGGGATGGAAAGTGGTAACCTCTGTTAGTGGAGGGGGTCTA

AlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArg
4441 GCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGAAGCCAGGCATCTACAGA
CGACAGAGGGCGTGAGTTGCCAGCCCCGCTGACACGTCGGTCCGTTGGTAGATGCT
PheValAlaProGlyGluArgProSerGlyMetPheAspSerSerValLeuCysGluCys
4501 TTTGGCACGGGGAGGCCCTCCGGCATGTTCGACACTCGTCGTCCTCTGTGAGTGC
AAACACCGTGGCCCTCCGGGGAGGCCGTACAAGCTGAGCAGGCCAGGAGACACTCAGG

TyraSpaIaGlyCysAlaTrpTyrGluLeuThrProAlaGluThrValArgLeuArg
4561 TATGACGCCAGGCTGTGCTTGTTATGAGCTCACGCCGCCGAGACTACAGTTAGGCTACGA
ATACTGGCTCCGACACGAACCTACTCGAGTGCGGGGGCTCTGATGTCAATCCGATGCT

AlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeuGluPheThrPheGluGly
4621 GCGTACATGAACACCCGGGGCTCCCGTGTGCCAGGACCATCTGAATTGGGAGGGC
CGCATGTACTTGTGGGGGGGGGAAGGGCACACGGTCCTGGTAGAACTTAAACCTCCCG

ValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGly
4681 GTCTTTACAGGGCCTCACTCATATAGATGCCCACTTCTATCCAGACAACCGAGTGGG
CAGAAATGTCCGGAGGTGAGTATCTACGGGTGAAGATAGGGTCTGTTCTGTCACCC



FIG. 72N

4741 GluAsnLeuProTyrIleuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaPro
GAGAACCTTCCTAACCTGGTAGCGTACCAAGCCACCGTGTGGCTAGGGCTCAAGCCCT
CTCTTGGAAAGGAATGGACCATCGCATGGTTGGCACAACGGGATCCCGAGTTGGGA

4801 ProProSerTrpAspGlnMetTrrPlysCysLeuIleargLeuLysProTyrLeuHisGly
CCCCCATCGTGGGACCAAGATGGAAAGTGTGTTGATTCGCCTCAAGCCCACCCCTCCATGGG
GGGGTAGCACCCTGGTCTACACCTCACAAACTAACGAGGACTTCGGGTGGAGGTACCC

4861 ProThrProLeuTyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrLeuHisPro
CCAACACCCCTGCTATACAGACTGGGGCGTGTTCAGAAATGAAATCACCCCTGACCCACCA
GCTTGTGGGACGATATGTCAGACCTGACCCCGCACAAGTCTTACTTTAGTGGACTGCGTGGGT

4921 ValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluValValThrSerThrTrp
GTCACCAAATACATCATGACATGCGATGTCGGGGGACCTGGAGGTGGTCAACGAGCACCTGG
CAGTGGTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAGCAGTGTCTGGACC

4981 ValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaLeuAlaTyrCysLeuSerThrGlyCysVal
GTGCTCGTGGGGCGTCTGGCTGGCTGGCTGGCGGTATGGCTGTCAACAGGCTGGTG
CAGGAGCAACCGCCGAGGAGCCGACGAAACCGGGCATAACGGACAGTTGTCCGACGCAC

5041 ValIleValGlyArgValValLeuSerGlyLysProAlaAlleleProAspArgGluVal
GTCTAGTGGCAGGGTGTCTGGTCCGGGAAGCCGGCAATCATACCTGACAGGGAAAGTC
CAGTATCACCCGGTCCCAGCAGAACAGGCCTCTGGCGTTAGTATGGACTGTCCCTCAG

5101 LeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGln
CTCTTACCGGAGGTTGATGAGATGGAAAGAGTGTCTCAGCACTTACCGTACATCGACAA
GAGATGGCTCTCAAGCTACTCTACCTCTCACGAGAGTGTGAATGGCATGTAGCTCGT



FIG. 720

5161 GlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuGlnThrAlaSer
GGATGATGCTGCCGGAGCAGTCAGCAGAAGGCCCTGGCCCTGGAGACGGGTRCC
CCCTACTACGAGCGGCTCGTCAAGTTCGTCTCGGGAGCCGGAGCGTCTGGCCAGG
ArgGlnAlaGluValLeuAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPhe
5221 CGTCAGGAGGTATGCCCTGCTGTCCAGCAACTGGCAAACACTCGAGACCTTC
GCAGTCGGTCTCCATAAGCGGGGACAGGGTCTGGTGTACCGTTTGAGCTCTGGAAG
TrpAlaLysIleMetTrpAsnPheIleSerGlyIleGlnTyroIeuAlaGlyLeuSerThr
TGGCGGAAGCATATGGAACTTCATCAGTGGATAACAATACTTGGCGGGCTTGTCAACG
5281 ACCCGCTTCGTATACACCTTGAAGTAGTCACCTATGTTATGAAACGGCCGAACAGTTGC
LeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerPro
5341 CTGCCTGGTAACCCGCCATTGCTTCATTGATGGCTTTACAGCTGCTTCACCAAGCCA
GACGGACCATGGGGCGGTAAACGAAGTAACTAACCGAAATGTCGACGACAGTGGTCGGGT
LeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnIle
5401 CTAACCACTAGCCAAACCCCTCCTCTAACATATTGGGGGGGGTGGCTGCCAGCTC
GATTCGGTCACTGGTTGGGAGGAAGTTGTATAACCCCCCAACCCACCGACGGGTCGAG
AlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGly
5461 GCGGGGGGGTGGCTACTGCCTTGTGGGGCTGGCTTAGCTGGGCCGCATCGGC
CGGGGGGCCACGGCAGCGAACACCCCGCGACCGAATCGACCGGGGGTAGCCG



FIG. 72P

5521 SerValGlyIeuglyLysValLeuLeuAspIleLeuAlaGlyTyrglyAlaGlyValAla
AGTGTGGACTGGGGAAAGGTCTCATAGACATCCTGAGGGTATGGCGGGCGTGCG
TCACAACCTGACCCCTCCAGGAGTATCTGTTAGGAACGTCCTACCGGCCGCCACCGC

5581 GlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThrGluAspLeuVal
GGAGGCTCTGTGGCATTCAAGATCATGACCGGCTGAGGTCCACGGAGGCTGCTGGAC
CCTCGAGAACACCGTAAAGTCTAGTACTCGCCACTCCAGGGAGGCTGCTCCTGGAC

5641 AsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGlyValValCysAlaAla
AATCTACTGCCCCCATCCTCTGCCGGAGCCTCGTAGTGGCGTGTCTGTGCAGCA
TTAGATGACGGGGGGTAGGAGAGCAGGGCCTCGGAGCATCAGCCGACACCAGACACGTCGT

5701 IleLeuArgArgIleValGlyProGlyGluGlyAlaValGlnTrpMetasnArgLeuIle
ATACTGCGCCGGCACGTTGGCCCCGGAGGGGCAGTGCAGTGGATGAAACGGCTGATA
TATGACGGGGCGTCAACGGGGCCCTCCCCGTACGTCACCTACTTGGCCGACTAT

5761 AlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrValProGluUserAspAla
GCCTTCGGCCTCCGGGGAAACCATGTTCCCCACGCCTACTACGGCCGGAGAGCGATGCA
CGGAAGCGGGAGGGCCCCCTGGTACAAAGGGGGTGCCTGATGCCACGGCCTCTGGCTACGT

5821 AlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeu
GCTGGCCGGCTCACTGCCATACTCAGCAGGCCACTGTAACCCAGCTCTGAGGGGACTG
CGACGGGGCAGTGGACGGTATGAGTCGTCGGAGTGACATTGGGTCGAGGACTCCGCTGAC



FIG. 72Q

HisGlnTrpIleSerSerGlyCysThrThrProCysSerGlySerTrpIleSerGlyAspIle
5881 CACCACTGGATAAGCTCGGAGGTGACACTCCATGCTCCGGTTCTGGCTAAAGGGACATC
GTGGCACCTATTGGAGGCCAACGAGGCAAGGACCGATTCCCTGTAG
TrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpIleLysAlaLysLeuMet
5941 TGGGACTGGATATGCGAGGTGTTGAGCGACTTTAACGACCTGGCTAAAGCTTAAGCTCATG
ACCTGACCTATAACGCTCCACAACACTCGCTGAATTCTGGACCGATTTCGATTCGAGTAC
ProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTYRlysGlyValTrpArg
6001 CCACAGCTGCCCTGGATCCCTTGTCTCCTGCCAGGGGGTATAAGGGGTCTGGCGA
GGTGTGACGGACCCTAGGGAAACACAGGACGGTCCGGCCCATATCCCCAGACCGCT
ValAspGlyIleMetThrIleMetThrArgCysHisCysGlyIalaGluIleThrGlyHisValLys
6061 GTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAA
CACCTGCCGGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAGTGACCTGTACAGTT
AsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPhe
6121 AACGGGACGGATGGGATCGTCGGTCTAGGACCTGCAGGAACATGTGGAGGTGGACCTTC
TTGCCCTGTCTACTCCTAGCAGCCAGGATCCTGGACGCTCTGTACACCTCACCCCTGGAA
ProIleAsnIleTyrThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPhe
6181 CCCATTAATGCCTACACCACGGGGCCCTGTACCCCCCTTCCTGCCCGAACTACACGTTG
GGGTAATTACGGATGTGGTGGGGGGGACATGGGGGAAGGACGGGGCTGTGATGGCAAG



FIG. 72R

AlaLeuTrpArgValSerAlaGluGluTyrrValGluIleArgGlnValGlyAspPheHis
6241 GCGCTATGGGGTGTCTGCAGAGAATATGGCAGCTGGGGACTTCCAC
CGGATAACCTCCCACAGACGCTCTCCTTATCACCTCTATTCCGTCACCCCTGAAGGTG
TyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGlnValProSerProGlu
6301 TACGGTGACGGGTATGACTACTGACAATCTCAAAATGCCGTGCCAGGTCCATGCCCGAA
ATGCACTGCCATACTGATGACTGTTAGAGTTACGGGACCGTCCAGGGTAGGGCTT
PhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaProProCysLysProLeu
6361 TTTTCACAGAATTGGACGGGGTGGCCTACATAGGTTGCGCCCCCTGCAAGCCTTG
AAAAGTGTCTTAACCTGCCAACGGGATGTTACCAAAACGGGGGGGACGTTGGAAC
LeuArgGluGluValSerPheArgValGlyLeuHisGluTyrrProValGlySerGlnLeu
6421 CTGGGGAGGGAGGTATCATTAGAGTAGGACTCCACGATAACCGGTAGGGTCGCAATT
GACGCCCTCCATAGTAAGGCTCATCCTGAGGTGCTTATGGCCATCCACGGTTAA
ProCysGluProGluProAspValAlaValLeuThrSerMetLeuThrAspProSerHis
6481 CCTTGCGAGCCCGAACGGACGTGGCCGTGACGTCCATGCTCACTGAGGTGACTAGGGAGGGTA
IleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerProProSerValAlaSer
6541 ATAACAGCAGAGGGGGGGGGGAAGGTTGGGGAGGGATCACCCCCCTGTGGCCAGC
TATGTGCTCCGCCGGGGGGCTTCCAAACCGCTCCCTAGGGGGAGACACCGGTCG

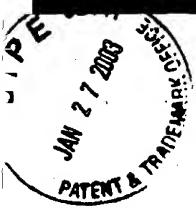


FIG. 72S

6601 SerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThrAlaAsnHisAsp
TCCTGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGACACCCTAACATGAC
AGGAGCCATCGGTGATAGGGGGAGGTAGAGAGTTCCGGTGAACGTGGCGATTGGTACTG

6661 SerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlyAsn
TCCCTGATGCTGAGCTCATAGGCCAACCTCTATGGAGGCAGGATGGGGCGAAC
AGGGCACTACGACTCGAGTACTCCGGTTGGAGGATAACCTCCGTCCTACCCGGCGTTG

6721 IleThrArgValGluSerGluAsnLysValValLeuLeuAspSerPheAspProLeuVal
ATCACCCAGGGTTGAGTCAGAAACAAGTGGTGAATCTGGACTCCTTCGATCCGCTTG
TAGTGGTCCCAACTCAAGTCTTTGTTTCACCACCTAACAGACCTGAGGAAGCTAGGGCGAACAC

6781 AlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArgLysSerArgArg
GGGGAGGGACGAGGGAGATCTCCGTACCCCGAGAAATCCTGGGAAGTCTGGAGA
CGCCTCCTCTGCTCGCCCTCTAGAGGCATGGCGCTCTTAGGACGCCTTCAGACCTCT

6841 PheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProProLeuValGluThr
TTCGCCCCAGGCCCTGCCGTTGGGGGGGGACTATAACCCCCGCTAGTGGAGACG
AAGGGGTCCGGGACGGGCAAACCCGGCCGGCCTGATATTGGGGGGCATCACCTCTGC

6901 TrpLysLysProAspTyrGluProProValValHisGlyCysProLeuProProProLys
TGGAAAAAGCCCGACTACGAAACCACCTGTGGTCCATGGCTGTCCGCTTCCACCTCAAAG
ACCTTTTCCGGCTGATGCTTGGGGACACCAGGTACCCGACAGGCCAAGGTGGGGTTG

6961 SerProProValProProProArgLysLysArgThrValValLeuThrGluSerThrLeu
TCCCTCCTGTCCTCCGCTCGGAAGAAGGGACGGGACGGTGGTCCCTCACTGAATCAACCTA
AGGGAGGACACGGGGGGAGCCTTCGCTGCCACCAAGGAGTGAECTTAGTTGGGAT

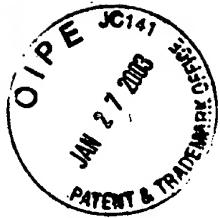


FIG. 72T

SerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSerThrSerGlyLile
7021 TCTACTGCCTGGCCGGAGCTGCCACCCAGAACGCTTGGCAGCTCCTCAACTTCCGGCATT
AGATGACGGAAACCCGGCTCGAGGGTGGTCTCGAAACCGTCGAGGAGTGAAGGCCGTA
ThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGlyCysProProAspSer
7081 ACGGGCGACAATA CGACAACATCCTCTTGAGGCCCGCCCTTGAGCTGCCGGGGACTCC
TGCCCGCTTTATGCTGTGAGACTCGGGGGGGAAAGACCGACGGGGGGCTGAGG

AspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGlyAspProAspLeu
7141 GACGCGCTGAGTCCTATTCCTCCATGCCCGGCTGGAGGGAGCCCTGGGGATCCGGATCTT
CTGCGACTCAGGATAAGGAGGTACGGGGGGACCTCCCGCTCGACCCCTAGGCCCTAGAA
SerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAspValValCysCys
7201 AGCGGACGGGTCAATGGTCAACGGTCAGTAGTGAGGCCAACGGGGAGGATGTCGTGCTGC
TCGCTGCCCACTACCACTGGCCACTCATCACTCCGGTTGCGCCTCCTACAGCACACGACG

SerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAlaAlaGluGluGlnLys
7261 TCAATGCTTACTCTGGACAGGGCGACTCGTACCCCGTGCCTGGGCACGGGGCAGGGGG
AGTTACAGAATGAGAACCTGTCCGGTGTGAGCAGTGGGGCAGGGGGCTTCTGTCTT

LeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHiShiAsnLeuValThrTyrSerThr
7321 CTGGCCATCAATGCACTAAGCAACTCTGCTACCGTCACCAATTGGGTATTCACC
GACGGGTAGTTACGGTGTGAGCAACGATGCACTGGGTGTAAACACATAAGGTGG



FIG. 72U

7381 ThrSerArgSerAlaCysGlnargGlnlysLysValthrPheaspargleuGlnValleu
ACCTCACCGCAGTGCTTGCCAAAGGCAGGAAGTCACATTGACAGACTGCAAGTTCTG
TGGAGTGGCTCACGAACGGTTTCCGTCTTTCAGTGTAACTGTCTGACGGTCAAGAC

7441 AspSerHistYrglnaspValleulysGluvallysalaalaalaSerlysvallysala
GACAGCCATTACCAAGGACGTACTCAAGGAGGTTAACGCAGGGCGTCAAAGTGAAGGCT
CTGTCGGTAAAGGTCCATGAGTTCTCCAAATTGCTCGCCGAGTTTCACTTCCGA

7501 AsnLeuLeuSerValGluGluAlaCysSerLeuThrProProHisSerAlaLysSerLys
AACTTGCTATCCGTAGAGGAAGCTTGACGCCAACACTCAGCCAATCCAAG
TTGAACGGATAGGCATCTCCTCGAACGTTGGACTGCGGGGTGTGAGTCGGTTAGGTC

7561 PheGlyTyrGlyAlaLysaspValargCysHisAlaarglysalaValthrHisIleasn
TTTGTTATGGGGCAAAGAGACGTCGCTGCCATGCCAGAAAGGCCGTAACCCACATCAAC
AAACCAATAACCCGTTTCTGCAGGCCACGGTACGGTCTTCCGGCATGGGTAGTTG

7621 SerValTrpLysAspIleuLeuIluaspAsnValthrProIleAspThrThrIleMetAla
TCCGGTGTGAAAGACCTCTGGAAAGACAATGTAACACCAATAGACACTACCATCATGGCT
AGGCCACACCTTCTGGAAAGACCTTCTGTACATTTGGTTATCTGTGATGGTAGTACCGA

7681 LysAsnGluValPheCysValGlnProGluLysGlyGlyArgLysProAlaArgLeuIle
AAGAACGAGGTTTCTCGCTTCAGCCTGAGAAGGGGGTCTGTAAGCCAGCTCGTCATC
TTCTTGCTCCAAAAGACGGCAAGTCCGGACTCTCCCCCAGCATCGGTCCGAGCAGAGTAG

7741 ValPheProAspIleuGlyValArgValCysGluLysMetAlaLeuTyraspValValthr
GTGTTCCCCGATCTGGCGCTGCCGTTGCGAAAGATGGCTTGTACGACGCTGGTTACA
CACAGGGCTAGACCCGCACGGCACACGCTTCTACCGAAACATGCTGACCAATGT



FIG. 72V

LysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArg
7801 AACCTCCCTGGCCGTGATGGGAAGCTCCTACGGATTCATACTCACCGACAGCGG
TCGAGGGAAACGGCACTACCCCTCGAGGATGCCATAAGGTTATGAGTGGTCTCGGCC

ValGluPheLeuValGlnAlaPheLysSerLysThrProMetGlyPheSerTyrAsp
781 GTTGATTCCTCGTGCAAGCGTGGAAAGTCCAAGAAACCCAATGGGGTTCTCGTATGAT
CAACTTAAGGAGCACGTTGCCACCTTCAGGTTCTTTGGGTTACCCCAAGAGCATACTA
ThrArgCysPheAspSerThrValThrGluSerAspIleArgThrGluGluAlaIleTyr
7921 ACCCGCTTGTACTCCACAGTCACTGAGAGGCCATCCGTACGGAGGAGCAATCTAC
TGGCGACGAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCCTCCGTTAGATG

GlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeu
7981 CAATGTTGTGACCTCGACCCCCAAGGCCGCTGCCATCAAGTCCCTCACCGAGAGGCTT
GTTACAAACACTGGAGCTGGGGTTGGGCCACCGGTAGTTCAAGGAGGGCTCTCCGAA

TyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArg
8041 TATGTTGGGGCCCTCTTACCAATTCAAGGGGAGAACGCGGCTATCGAGGTGCCGC
ATACAACCCCCGGGAGAATGGTTAAGTCCCTCTTGACGCCGATAGCGCTCCACGGCG
AlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArg
8101 GCGAGCGGGCTACTGACAACTAGCTGTGGTAACACCCCTCACTTGCTACATCAAGGCCGG
CGCTCGCCGATGACTGTTGATCGACACCATGGGAGTGAACGATGTTCCGGGCC



FIG. 72W

8161 AlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspPleu
GCAGCCTGTCGAGCCGCAGGGCTCCAGGACTGCACCATGCTCGTGTGGCCACGACTTA
CGTCCGACAGCTGGGGCTCCAGGACTGCACCATGCTCGTGTGGCCACGACCAAT
8221 ValValIleCysGluSerAlaGlyValGlnGluAspAlaAlaSerLeuArgAlaPheThr
GTCGGTTATCTGTGAAAGGGGGGCTCCAGGAGCCGGAGCCCTGAGAGGCCTTCACCG
CAGCAATAGACACTTTCGCGCCCCCAGGTCTCCTGCGCCGCTCGGACTCTCGGAAGTGC
8281 GluAlaMetThrArgTyrSerAlaProProGlyAspProProGlnProGluThrAspPleu
GAGGCTATGACCAGGTACTCCGCCCCCTGGGGACCCCCAACACCAAGAACGAAATAGACTTG
CTCCGATACTGGTCCATGAGGGGGGGGACCCCTGGGGGTGTGGTCTTATGCTGAAC
8341 GluLeuIleThrSerCysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArg
GAGCTCATACATCATGCTCTCCAACTGGTCACTGGCCACGACGGCCGCTGGAAAGAGG
CTCGAGTATTGTAGTACGAGGAGGTGACAGTCAGGGGTGCTGGCCGACCTTCTCC
8401 ValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAlaAlaTrpGluThrAla
GTCTACTACCTCACCCCGTGACCCCTACAAACCCCCCTGGCAGAGGCTGGTGGAGACAGCA
CAGATGATGGAGTGGGCACTGGATGTTGGGGAGGCCCTCTGGCAGCCACCCCTCTCC
8461 ArgHisThrProValAsnSerTrpLeuGlyAsnIleLeuMetPheAlaProThrLeuTrp
AGACACACACTCCAGTCATACTCCTGGCTAGGCCACATAATCATGTTGGCCCCCACACTGAG
TCTGGTGAGGTCAAGGACCGATCCGTTGTTAGTAGTACAACGGGGTGTGACACC



FIG. 72X

8521 AlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAlaArgAspPheGlnLeuGlu
GCGAGGATGATACTGATGACCCATTCTTAGCGCCTTATGCCAGGGACCAAGCTGAA
CGCTCTACTATGACTACTGGTAAGAAATCGCAGGAATATCGGTCGGTCGGAACCT

8581 GluAlaLeuAspCysGluIleTyrGlyIleAlaCysTyrSerIleGluProLeuAspLeuPro
CAGGCCCTCGATTTGAGATCTACGGGCCTGCTACTCCATAGAACCACTTGATCTACCT
GTCCGGAGCTAACGCTCTAGATGCCCGGACGATGAGGTATCTTGGTGAAGTAGATGGA

8641 ProIleIleGlnArgLeuHisGlyLeuSerAlaPheSerIleHisSerTyrSerProGly
CCAATCATCAAAGACTCCATGGCCTCAGCGCATTTCACACTCCACAGTTACTCTCCAGGT
GGTTAGTAAGTTCTGAGGTACCGGAGTCGGTCAAGTGAGGTGTCAATGAGAGGTCCA

8701 GluIleAsnArgValAlaAlaCysLeuArgLysLeuGlyValProProLeuArgAlaIrp
GAAATTAAAGGGTGGCCGCATGCCCTCAGAAACTTGGGTACCGCCCTGCGAGGCTGG
CTTTAATTATCCCACGGCGTACGGAGTCTTGAACCCCATGGGGAACGGCTCGAAC

8761 ArgHisArgGalaArgSerValValArgGalaArgLeuLeuAlaArgGlyGlyArgGalaAlaAlle
AGACACCGGGCCGGAGCGCTCCGGCCTAGGCTCTGGCCAGAGGGCAGGGCTGCCATA
TCTGGGGCCGGCCCTCGCAGGGCGCATCCGAAGACCGGGCTCCGCCGACGGTAT

8821 CysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLysLeuThrProIleAla
TGTGGCAAGTACCTTCAACTGGGCAGTAAGAACAAAGCTCAAACACTCCAAATAGCG
ACACCGTTCATGGAGAAGTTGACCCGTCATTCTGTTTGGAGTGTGAGGTTATCGC



FIG. 72Y

AlaAlaGlyGinLeuAspLeuSerGlyTrpPheThrAlaGlyTyrSerGlyGlyAspIle
GCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTACAGGGCTGGCTACAGGGGGAGACATT
CGGCGACCGGGTCGACCTGAAACAGGCCGACCGATGTCGCCCGACCTCTGTAA

8881
TyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
TATCACAGCGCTGCTCATGCCCGGGCCGCTGGATCTGGTTTGCCC
ATAGTGTCCACAGAGTACGGGGGGGGCGACCTAGACCCAAACGGG

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1 GluPheGlySerValIleProThrSerGlyAspValValValValAlaThrAspAlaLeu
1 GAATTGGGTCCGTCATCCCGACCAGCGCGATGTTGTCGTCGTCGCAACCGATGCCCTC
CTTAAGCCCAGGCAGTAGGGCTGGTCGCCGCTACACAGCAGCACCGTTGGCTACGGGAG
1 ECOR1, 7 NLALV, 8 AVA2 SAU96, 15 FOK1, 24 NSPB11, 26 FNU4H
1, 52 SFAN1, 57 MNLL1, 60 NLAL11,
61 MetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThrCysValThrGln
ATGACCGGCTATACCGCGACTTCGACTCGGTGATAGACTGCAATACGTGTGTCACCCAG
TACTGGCCGATATGCCCCGCTGAAGCTGAGCCACTATCTGACGTTATGACACACAGTGGTC
65 HPA11, 74 HPA11, 83 TAQ1, 85 HINFL, 90 HPH, 106 AFL111 MA
E2, 112 MAE3, 113 HPH,
121 ThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAsp
ACAGTCGATTCAGCCTTGACCCCTACCTCACCATTGAGACAATCACGCTCCCCAAGAT
TGTCAGCTAAAGTCGGAACGGGATGGAAGTGGTAACCTGTTAGTGCAGGGGGTTCTA
125 TAQ1, 149 HPH, 178 SFAN1,
181 AlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArg
GCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAAGCCAGGCATCTACAGA
CGACAGAGGGCGTGAGTTGCAAGCCCCGTCGACCGTCCCCCTCGGTCCGTAGATGTCT
198 MAE2, 226 ECOR11 SCRF1, 230 SFAN1,
241 PheValAlaProGlyGluArgProProAlaCysSerThrArgProSerSerValSerAla
TTTGTGGCACCGGGGGAGCGCCCTCCGGCATGTTGACTCGTCCGTCTCTGTGAGTGCC
AAACACCGTGGCCCCCTCGCGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGG
246 BAN1 NLALV, 250 HPA11 NC11 SCRF1, 257 HAE11, 258 HHAL, 2
62 MNLL1, 265 HPA11, 268 NSPC1, 269 NLAL11, 274 TAQ1, 276 HIN
F1, 287 MNLL1, 296 BSP1286,
301 ArgIle
CGAATTTC
GCTTAAG
302 ECOR1,

361

FIG. 74

FIG. 75

Overlap with 6k

1 Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Leu Ala
TTATCACAGCGCTGCTCATGGGGGGGGCTGGATCTGGTTTGCCCTACTCCCTGCCTGG
61 ATA TAGTGTGCGCACAGAGTACGGGGGGGGGCGACCTAGACCAAAACGGATGAGGACGAACG
Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg G P
TGCAGGGGTAGGCATCTACCTCCTCCCAACCGATGAAGGTGGGGTAAACACTCCGGCC
ACGTCCCCATCCGTAGATGGAGGAGGGTTGGCTACTTCCAACCCCATTTGTGAGGCCGG
121 T
A



FIG. 76

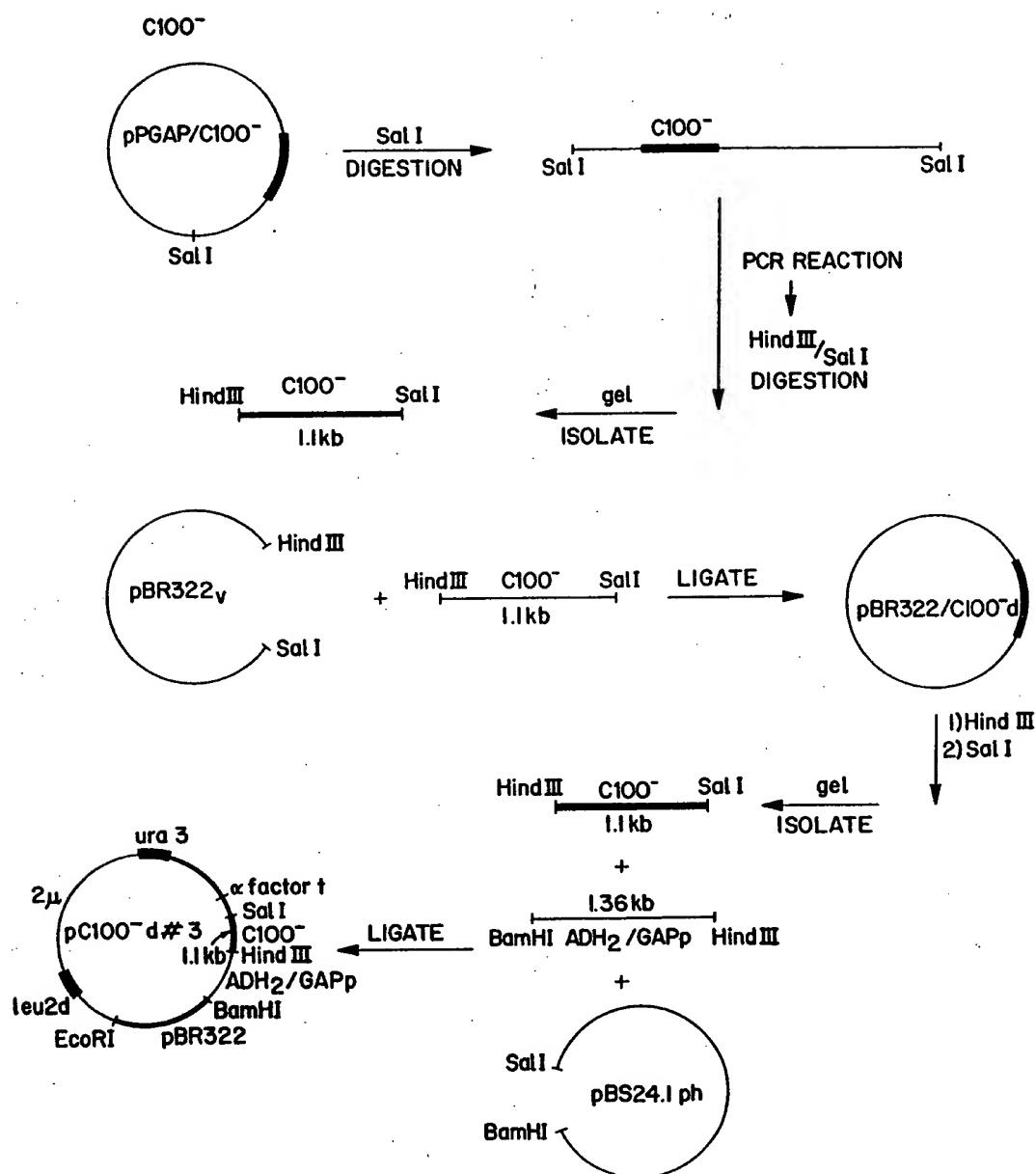
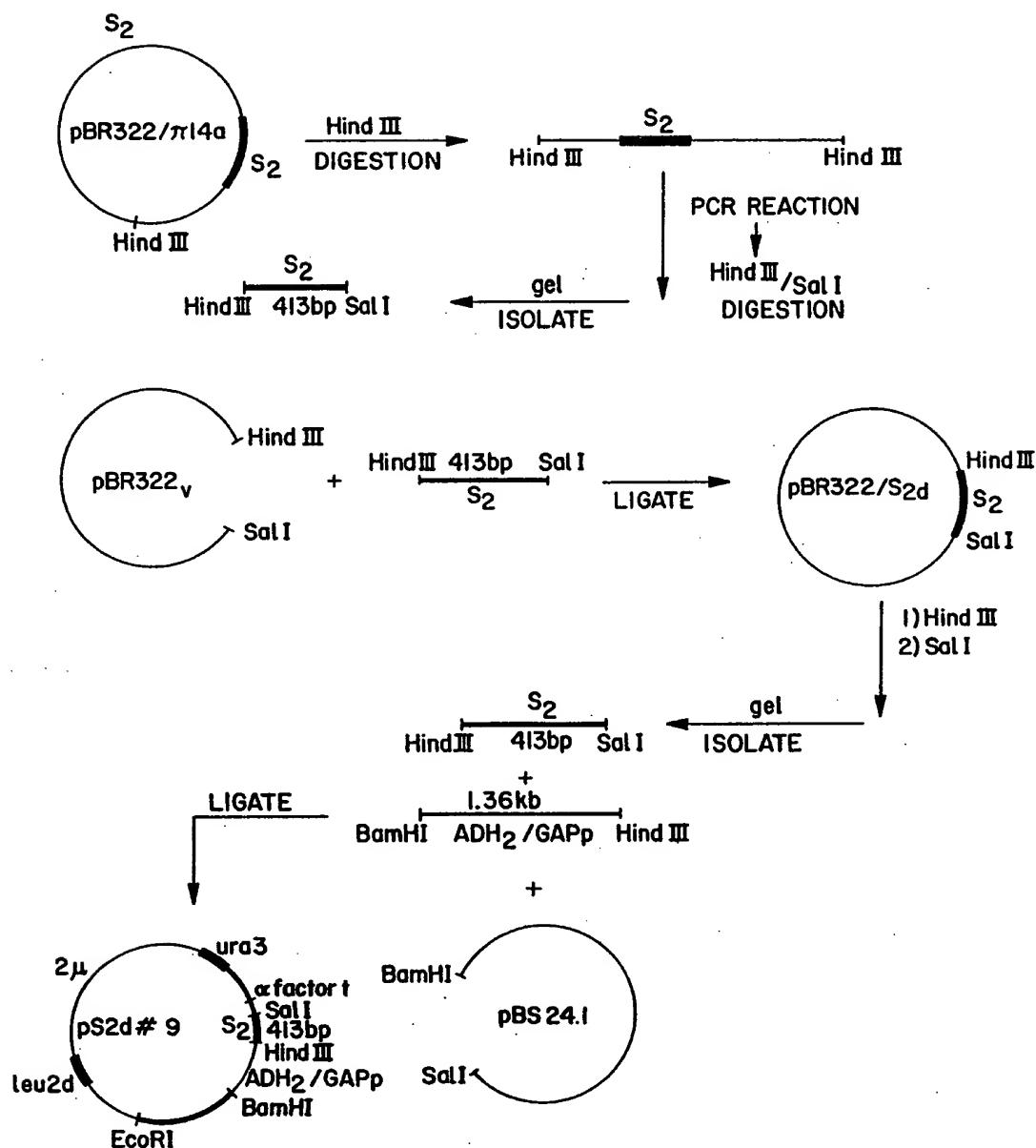




FIG. 77



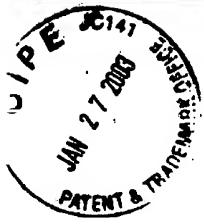


FIG. 78

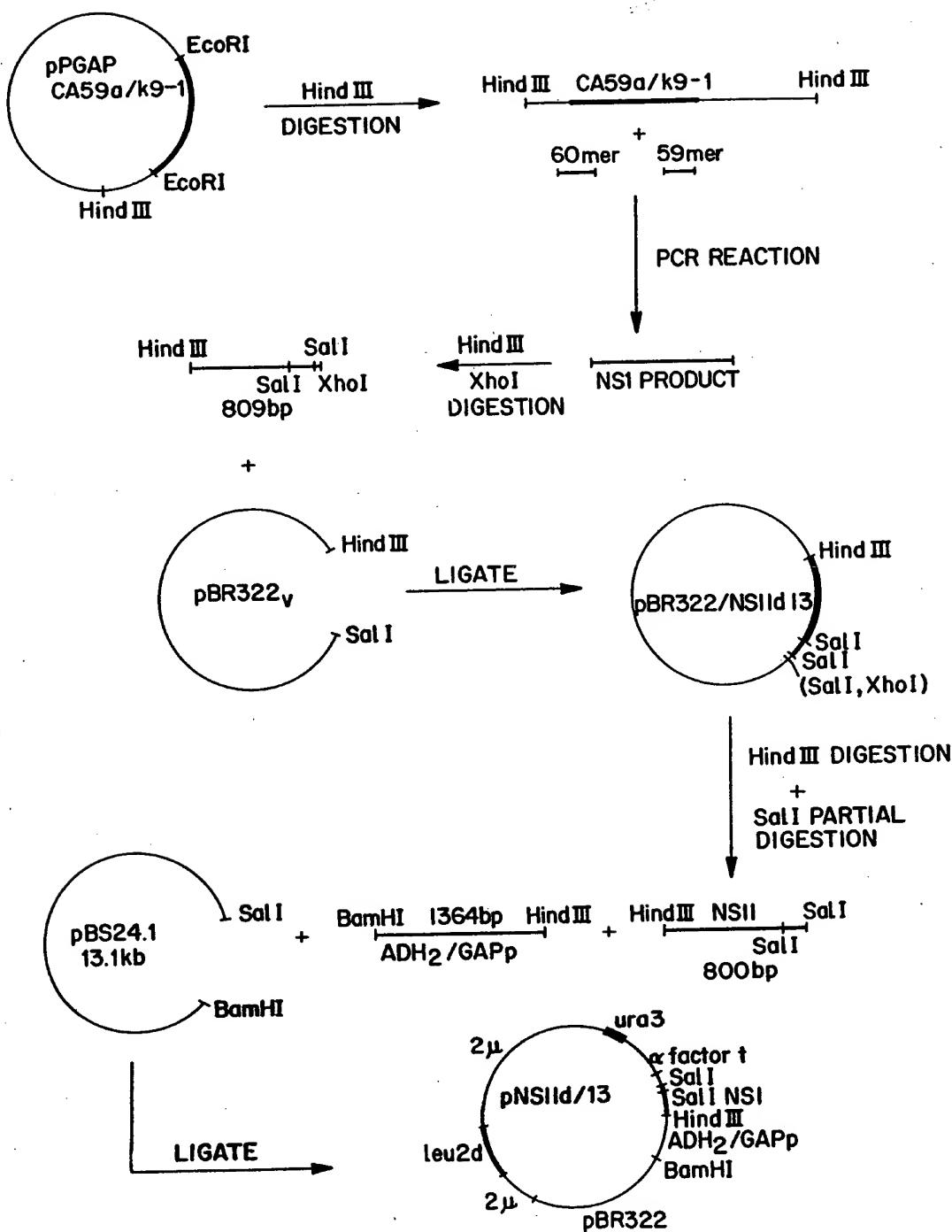




FIG. 79A

2 AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThr
 GCGGTGGACTTTATCCCTGTGGAGAACCTAGAGACAAACCATGAGGTCCCCGGTGTTCACG
 CGCCACCTGAAATAGGGACACCTCTGGATCTCTGTTGGTACTCCAGGGGCCACAAGTGC
 29 MAE1, 40 NLA111, 43 MNLL1, 45 AVA2 NLA1V SAU96, 49 NCII SC
 RF1, 50 HPA11,
 62 AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
 GATAACTCCTCTCCACCAAGCTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCATGCTCCC
 CTATTGAGGAGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGG
 69 MNLL1, 83 BSP1286, 92 ALU1, 97 ECOR11 SCRF1, 106 HPH, 109
 MNLL1, 113 NLA111,
 122 ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
 ACAGGCAGCGCAAAAGCACCAAGGTCCCCTGCTGCATATGCAGCTCAGGGCTATAAGGTG
 TGTCCGTGCGCGTTTCTGGTCCAGGGCGACGTATAACGTCGAGTCCGATATTCCAC
 126 BBV FNU4H1, 127 NSPB11, 129 FNU4H1, 145 AVA2 NLA1V SAU96
 , 148 NCII SCRF1, 149 HPA11, 152 BBV FNU4H1, 156 NDE1, 161 B
 BV FNU4H1, 163 ALU1, 165 DDE1,
 182 LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
 CTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTGGTGCTACATGTCACAGGCT
 GATCATGAGTGGGAGACACGACGTTGTGACCGAAACACGAATGTACAGGTTCCGA
 182 MAE1, 184 SCAl, 185 RSA1, 195 MNLL1, 203 BBV FNU4H1, 228
 AFL111 NSPC1, 229 NLA111,
 242 HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
 CATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCCATC
 GTACCCCTAGCTAGGATTGTAGTCTGGCCCCACTCTGTTAATGGTGACGTCGGGTAG
 242 NLA111, 246 BIN1, 247 MB01 SAU3A, 248 CLA1, 249 TAQ1, 25
 1 BIN1 MB01 SAU3A, 264 AVA2 SAU96, 267 HPA11 NCII SCRF1, 271
 HPH, 291 BBV FNU4H1,
 302 ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
 ACGTACTCCACCTACGGCAAGTTCCCTGCGACGGCGGTGCTCGGGGGCGCTTATGAC
 TGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCACGAGCCCCCGCGAATACTG
 302 MAE2, 304 RSA1, 340 BSP1286 HGIA, 343 AVAL, 350 HAE11, 3
 51 HHAl,
 362 IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
 ATAATAATTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTGGCATTGGCACT
 TATTATTAACACTGCTCACGGTGAGGTGCCTACGGTGAGGTAGGTAGAACCGTAACCGTGA
 372 MAE3, 391 FOK1, 392 SFAN1, 399 FOK1,
 422 ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValLeuAlaThrAlaThrPro
 GTCCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTGTGCTCGCCACCGCCACCCCT
 CAGGAACCTGGTTCTGACGCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGA
 431 TTHIII2, 435 ALWN1, 461 BSP1286 HGIA, 479 MNLL1,



FIG. 79B

482 ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGly
 CCGGGCTCCGTCAGTGCCTCATCCCAACATCGAGGAGGTTGCTCTGTCACCACCGGA
 GGCGAGGCAGTGACACGGGTAGGGTAGCTCCTCAACGAGACAGGTGGTGCGCT
 482 HPA11 NCI1 SCRF1, 484 BAN11 BSP1286, 485 NLA1V, 491 MAE3
 , 497 BSP1286, 503 FOK1, 513 TAQ1, 515 MN11, 518 MN11, 537 H
 PA11,
 542 GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
 GAGATCCCTTTTACGGCAAGGCTATCCCCCTGAAGTAATCAAGGGGGGAGACATCTC
 CTCTAGGGAAAAATGCCGTTCCGATAGGGGAGCTTCATTAGTCCCCCTCTGTAGAG
 543 XHO2, 544 BIN1 MBO1 SAU3A, 571 MN11, 573 TAQ1,
 602 IlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
 ATCTTCTGTCATTCAAAGAAGAAGTGCAGCACTCGCCGCAAAGCTGGTCGCATTGGC
 TAGAACAGACTAAGTTCTTCTTCACGCTGCTTGAGCGCGTTTCGACCAGCGTAACCG
 603 MBO11, 619 MBO11, 638 FNU4H1, 645 ALU1, 660 SFAN1,
 662 IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
 ATCAATGCCGTGCCCTACTACCGCGGCTTGACGTGTCGTACCGCACCAGCGCGAT
 TAGTTACGGCACCGGATGATGGGCCAGAACAGCAGTAGGGCTGGCGCTA
 672 HAE1, 673 HAE111, 682 NSPB11 SAC2, 683 THA1, 693 AFL111
 MAE2, 703 FOK1, 712 NSPB11, 714 FNU4H1,
 722 ValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
 GTTGTCGTCGTGCAACCGATGCCCTCATGACCGGCTATACCGCGACTTCGACTCGGTG
 CAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCAC
 740 SFAN1, 745 MN11, 748 NLA111, 753 HPA11, 762 HPA11, 771 T
 AQ1, 773 HIN11, 778 HPH,
 782 IleAspCysAsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThr
 ATAGACTGCAATACGTGTGTCACCCAGACAGTCGATTTCAGCCTGACCTTACCTTCACC
 TATCTGACGTTATGCACACAGTGGGTCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGG
 794 AFL111 MAE2, 800 MAE3, 801 HPH, 813 TAQ1, 837 HPH,
 842 IleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThr
 ATTGAGACAATCACGCTCCCCAAGATGCTGTCCTCGCACTAACGTCGGGGCAGGACT
 TAACTCTGTTAGTGCAGGGGTTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGA
 866 SFAN1, 886 MAE2,
 902 GlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMet
 GGCAGGGGAAGCCAGGCATCTACAGATTGTCGGCACCGGGGAGCGCCCTCCGGCATG
 CGTCCCCCTCGGTCCGTAGATGTCATAACACCGTGGCCCCCTCGCGGGAGGCCAC
 914 ECOR11 SCRF1, 918 SFAN1, 934 BAN1 NLA1V, 938 HPA11 NCI1
 SCRF1, 945 HAE11, 946 HHA1, 948 BGL1, 951 MN11, 954 HPA11, 9
 57 NSPC1, 958 NLA111,
 962 PheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThr
 TTGACTCGTCGGTCCCTCTGTGAGTGCTATGACGCAAGCTGTGCTTGATGAGCTCACG
 AAGCTGAGCAGGCAAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGC
 963 TAQ1, 965 HIN11, 976 MN11, 992 HGA1, 1003 TTHIII2, 1013
 BAN11 BSP1286 HGA1, 1014 ALU1,



FIG. 79C

1051 RSA1, 1054 NLA111, 1063 AVA1 NC11 SCRF1, 1064 HPA1
1 NC11 SCRF1, 1081 ECOR11 SCRF1,

1082 GlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHis
CAGGACCATCTTGAATTGGGAGGGCGTCTTACAGGCCACTCATATAGATGCCAC
GTCCTGGTAGAACTTAAACCCCTCCCGCAGAAATGTCGGAGTGAGTATATCTACGGGTG
1084 AVA2 SAU96, 1103 MN11, 1106 AHA11, 1107 HG11, 1117 HAE1
STU1, 1118 HAE111, 1120 MN11, 1133 SFAN1,
1142 PheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAla
TTCTATCCCAGACAAGCAGAGTGGGAGAACCTCCTACCTGGTAGCGTACCAAGCC
AAAGATAGGGTCTGTTCTCACCCCTTGGAGGAATGGACCATCGCATGGTCGG
1183 ECOR11 SCRF1, 1192 RSA1, 1201 DRA3,
1202 ThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeu
ACCGTGTGCGCTAGGGCTCAAGCCCTCCCCATCGTGGGACAGATGTTGAAGTGGTTG
TGGCACAGCGATCCCAGTCGGGAGGGTAGCACCTGGTCTACACCTTCACAAAC
1209 HHA1, 1212 MAE1, 1215 BAN11 BSP1286, 1226 MN11, 1239 NL
A1V, 1240 AVA2 SAU96, 1256 THII12, 1261 HIN11,
1262 IleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaVal
ATTCCGCTCAAGCCCACCCCTCCATGGCCAACACCCCTGCATACAGACTGGCGCTGTT
TAAGCGGAGTTGGGGAGGTACCCGGTTGTGGGACGATATGCTGACCCCGCACAA
1267 MN11, 1279 MN11, 1282 NC01, 1283 NLA111, 1286 SAU96, 12
87 HAE111, 1313 HAE11, 1314 HHA1,
1322 GlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAla
CAGAATGAAATCACCTGACGCACCCAGTCACCAATACATCATGACATGTCATGTCGGCC
GTCTTACTTAACTGGGACTGCGTGGGTCACTGGTTATGTAGTACTGTACAGCCGG
1332 HPH, 1339 HG11, 1349 MAE3, 1350 HPH, 1363 NLA111, 1367
NSPC1, 1368 NLA111, 1369 AVA3 NS11, 1371 NSPC1, 1372 NLA111,
1377 CF11 XMA3, 1378 HAE111,
1382 AspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAla
GACCTGGAGGTGCTCACGAGCACCTGGGTGCTGGCGGTCTGGCTGCTTGGCC
CTGGACCTCCAGTCAGTCGTGGACCCACGAGCACCGCCGAGGACCGACGAAACCGG
1384 ECOR11 SCRF1, 1385 GSU1, 1388 MN11, 1394 MAE3, 1399 BSP
1286 HG11, 1404 ECOR11 SCRF1, 1409 BSP1286 HG11, 1419 FNU4H1
, 1421 AHA11, 1422 HG11, 1426 ECOR11 SCRF1, 1430 BBV FNU4H1,
1437 CF11, 1438 HAE111, 1439 FNU4H1, 1441 THAI,
1442 AlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLys
GCGTATTGCCATGTCACAGGCTGCGTGGTCATAGTGGCAGGGTCGTCCTGTCCGGGAAG
CGCATAACGGACAGTGTCCGACCCAGTACCCGTCCCAGCAGAACAGCCCTTC
1453 HIN111, 1461 BBV FNU4H1, 1494 HPA11 NC11 SCRF1, 1501 NA
El,
1502 ProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCys
CCGGCAATCATACCTGACAGGGAGTCCTACCGAGAGTTGAGATGGAAGAGTGC
GGCGTTAGTATGGACTGTCCTCAGGAGATGGCTCTCAAGCTACTCTACCTTCACG
1502 HPA11, 1528 MN11, 1542 TAQ1, 1553 MB011, 1558 BSP1286 H
GIA,
1562 SerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLys
TCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTCAAGCAGAAG
AGAGTCGTGAATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTTCTCAG
1563 DDE1. 1576 RSA1, 1581 TAQ1, 1590 FOK1, 1594 SFAN1, 1612



FIG. 79D

TTHIII2, 1621 HAE111 SAU96,
**1622 AlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGln
 GCCCTCGGCCTCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATGCCCTGCTGTCCAG
 CGGGAGCCGGAGGAACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTC
 1624 MNLL, 1628 HAE111, 1630 MNLL, 1634 PST1, 1639 TTHIII1,
 1642 THA1, 1643 HGA1, 1658 MNLL,**
**1682 ThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGly
 ACCAACTGGCAAAACTCGAGACCTCTGGCGAAGCATATGTGAACTTCATCAGTGGG
 TGGTTGACCGTTTGTGAGCTCTGAAGACCCGCTTCGATACACCTGAAAGTAGTCACCC
 1697 AVA1 XH01, 1698 TAQ1, 1718 NDE1,**
**1742 IleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMet
 ATACAATACTTGGCGGGCTTGTCAACGCTGCTGGTAACCCGCCATTGCTTCAACATA
 TATGTTATGAACCGCCCGAACAGTTGCGACGGGACCATGGGGCGGTAAACGAAGTAACAC
 1762 HINC11, 1768 BBV FNU4H1, 1772 ECOR11 SCRF1, 1775 BSTE2,
 1776 MAE3,**
**1802 AlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIle
 GCTTTACAGCTGCTGTCACCAGCCACTAACCACTAGCCAAACCCCTCCTCAACATA
 CGAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTGGGAGGAAGTTGTAT
 1809 ALWN1 NSPB11 FVU11, 1810 ALU1, 1811 BBV FNU4H1, 1817 MA
 E3, 1818 HPH, 1836 MAE1, 1846 MNLL, 1849 MNLL, 1851 MB011,
**1862 LeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGly
 TTGGGGGGGTGGTGGCTGCCAGCTGCCGCCGGTGCGCTACTGCCTTGTGGGC
 AACCCCCCACCCACCGACGGGTCGAGCGCGGGGCCACGGCGATGACGGAAACACCCG
 1877 BBV FNU4H1, 1884 ALU1, 1889 FNU4H1, 1895 NC11 SCRF1, 18
 96 HPA11, 1898 BAN1 NLA1V, 1901 FNU4H1, 1919 HAE11, 1920 HHA
 1,**
**1922 AlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIle
 GCTGGCTTAGCTGGCGCCCATCGGCAGTGTGGACTGGGAAGGTCCCTCATAGACATC
 CGACCGAATCGACCGCGCGGGTAGCCGTACAACCTGACCCCTCAGGAGTATCTGTAG
 1927 DDE1, 1930 ALU1, 1934 AHA11 BAN1 HAE11 NARI NLA1V, 1935
 HHA1, 1937 FNU4H1, 1966 AVA2 SAU96, 1969 MNLL, 1978 FOK1,
**1982 LeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGly
 CTTGCAGGGTATGGCGGGCGTGGCGGGAGCTCTGGCATTCAGATCATGAGCGGT
 GAACGTCCCATACTCGCGCCCGAACGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCA
 1995 HHA1, 1996 THA1, 2010 BAN1 BSP1286 HGA1 SAC1, 2011 ALU
 1, 2021 BSM1, 2029 MB01 SAU3A, 2032 NLA111, 2039 HPH,**
**2042 GluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAla
 GAGGTCCCTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTGCCGGAGCC
 CTCCAGGGAGGTGCCCTGGACCAGTTAGATGACGGCGGTAGGAGAGCGGGCCTCGG
 2042 MNLL, 2044 AVA2 NLA1V SAU96, 2049 MNLL, 2057 MNLL, 2059
 AVA2 SAU96, 2060 TTHIII1, 2062 ECOR11 SCRF1, 2083 FOK1, 208
 6 MNLL, 2093 NC11 SCRF1, 2094 HPA11, 2096 NLA1V, 2097 BAN1
 BSP1286, 2101 MNLL,**
**2102 LeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGly
 CTCGTAGTCGGCGTGGTCTGTGAGCAATACTGCGCCGGCACGTTGCCCGGGCAGGGG
 GAGCATCAGCCGACCACTGCGTTATGACGCGGCGTGCACCGGGCCCCCTCCCC
 2123 BBV FNU4H1, 2134 HHA1, 2136 NAE1, 2137 HPA11, 2142 MAE2
 , 2147 HAE111 SAU96, 2149 AVA1 NC11 SCRF1 SM1, 2150 HPA11 N******



FIG. 79E

C11 SCRF1, 2156 MNLL,

2162 AlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
GCAGTGCAGTGATGAACCGGCTGATAGCCTTCGCTCCGGGGAAACCATGTTCCCC
CGTCACGTCACCACTTGGCCGACTATCGGAAGCGGAGGGCCCCTGGTACAAAGGG
2172 FOK1, 2179 HPA11, 2196 MNLL, 2199 AVA1 NC11 SCRF1 SM1,
2200 HPA11 NC11 SCRF1, 2205 NLAL1V, 2210 NLAL111,

2222

FIG. 80A

Human 23



GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyArgAla
1 GGCTTCGGCCGACCTCATGGGTACATACCGCTCTGGCTGGAGGCCCTCTTGGAGGGCGTGGCC
ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyRAlaThrGlyAsn
61 AGGGCCCTGGCGCACGGGTGGAAAGACGGCGTGAACATGCAAACAGGGAAC
CG A
LeuProGlyCysSerPheSerIleLeuAlaLeuLeuSerCysLeuThrValPro
121 CTTCCCTCGGTTGCTCCTATCTCCCTACTCTGCCTACTCTGCCTGACCGTGCCCC
GA T
AlaSerAlaTyrGlnValArgAsnSerThrGlyLeuTyRHisValThrAsnAspCysPro
181 GCTTCAGCCTACCAAGTGCGCAACTCTACGGGCTTTACCATGTCACCAATGATTGCCCT
AsnSerSerSerIleValTyrGluAlaAlaAspAlaIleLeuHisAlaProGlyCysValPro
241 AACTCGAGATTGTGTGACGGAGGGGGATGCCATGCCATCCTGACGGCTCCGGGTGTCCT
T C
CysValAlaArgGluAspAsnValSerArgCysIleTrpValAlaValThrProThrValAlaThr
301 TGCCTTCGGGAGATAACGTTCTCGAGATGTTGGGTGGCGGTGACCCCCACGGTGGCCACCG
G T
LysAspGlyLysLeuProThrThrGlnLeuWargArgHisIleAspLeuValGlySer
361 AAGGACGGAAACTCCCCACAAACGGAGCTTCGACGTACATCGATCTGCTTGCGGGAGCC
C A
AlaThrLeuCysSerAlaLeuTyRValGlyAspIleCysGlySerIlePheLeuValGly
421 GCCACCCCTCTGCTCGGCCCTACGTGGGGACCTTGGGACCTTCTTCTTGCGGT
T C
GlnLeuPheThrPheSerProArgArgHistIleTrpThrThrGlnAspCysAsnCysSerIle
481 CAACTGGTTACCTTCTCTCCAGGGCCACTGGACGCGAGGACTGCAACTGGTCTATC

FIG. 80B



TYR Pro GLY HIS Ile Thr GLY HIS ARG Met Ala Ile TRP Asp Phe Met Met Met Met Asn TRP Ser Pro
541 TAT CCC GGG CCA TATA ACG GG T CAC GG C AT GG C AT GG G AT AT GAT G AT G A A C T G G T C C C C T
G
Thr Ala Ala Leu Val Val Ala Gln Leu Ile Arg Ile Pro Gln Ala Ile Leu Asp Met Ile
601 ACG GGG C AT T G G T A G T G G T C A G T C G C T C C G G A T T C C A C A A G C C A T C T T G G A C A T G A T C
G AG
Ala GLY Ala His TRP GLY Val Leu Ala GLY Met Ala Ile Tyr Phe Ser Met Val GLY Asn TRP
661 G C T G G T G C T C A C T G G G A G T C C T G G G C A T G G C G T A T T T C C A T G G T G G G A A C T G G
G
Ala Lys Val Leu Val Leu Phe Ala GLY Val Ala GLU Thr His Arg Thr
721 G C G A A G G T C C T G G T A G T G C T G C T C A T T T G C C G G C A G C G G G A A A C C C A C C G T A C C
G
GLY GLY Ser Ala Ala Arg Ser Thr Ala Ile Asn Leu Phe Thr Pro GLY Ala Arg
781 G G G G A A G T G C C G C C G C A G C A C G G C T G G A G T G C T A G T G C T C T C A C A C C A G G G C T A G G
C T A
Gln Asn Ile Gln Leu Ile Asn Thr Asn Gly Ser Trp His Ile Asn Ser Thr Ala Leu Asn
841 C A G G A C A T C C A G C T G A T C A A C A C C A A C C A A C G G C A G T T G G C A C A T C A T A T G T A C G G C C T T G A A C
AT
Cys Asn Asp Ser Leu Thr Thr GLY Leu Phe Tyr Thr His Ile Lys Phe Asn
901 T G C A A T G A C A G C C T T A C C A C C A C C A A C C A A C C A A C C A A C C A A T T C A A C
A
Ser Ser GLY Cys Pro Glu Arg Leu Ala Ser Cys Arg Pro Leu Thr Asp Phe Ala Glu
961 T C T T C A G G C T G C T G C C G A G G G T C C G A C C C C T C A C C G A T T T G C C C A G G
G A G



FIG. 81A

Human 27

Gly Phe Ala Asn Leu Pro Leu Val Glu Ala Pro Leu Glu Gly Ala Ala Ala
 1 GGCTT CGCC GACCT CAT GGGT ACAT TCCG CTG TCG GCT CCCT CTT GGG GGT GGC

 Arg Ala Leu Ala His Glu Val Arg Val Leu Glu Asp Glu Val Asn Tyr Ala Thr Gly Asn
 61 AGGG CCT CGG GCAT GGG CGAT GGG CCT CGG GT TCT GGAA AGAC GG CGT GA ACT AT GCA ACAG GG AAC

 Leu Pro Glu Cys Ser Phe Ser Ile Phe Leu Ala Leu Leu Ser Cys Leu Thr Val Pro
 121 CTT CCT GGT T GCT CCT TCT AT CCT CCG CT GCT CTT GCT T GAC CCT GAC CGT GCC

 Ala Ser Ala Leu Val Arg Asn Ser Ser Gly Ile Tyr His Val Thr Asn Asp Cys Pro
 181 GCAT CGGC CCT ACCA AAG TAG CGCA ACT CCT CGG CA ATT TAC CAT GT ACCA AT GAT GATT GCG CCT

 Asn Ser Ser Ile Val Leu Val Asp Thr Ile Leu His Ser Pro Gly Cys Val Pro
 241 ATT CGACT ATT GTG TAC CGAG AC GGG CGAC ACC AT CCT AC ACT CCT CGGG GT GTC CCT
 C

 Cys Val Arg Glu Gly Asn Ala Asp Ser Lys Cysteine Val Pro Val Ala Pro Thr Val Ala Thr
 301 TCG GTR CCC GAG GGT AAC GCG CTG AAAT ATG TGG GT GCG GT AG CCCC ACAGT GGC ACC
 G

 Arg Asp Glu Asn Leu Pro Ala Leu Arg His Ile Asp Leu Leu Val Gly Ser
 361 AGGG GCA AAC CCT CCC GCA ACG CAG CCT CGAC GCT ACAT CGAT CTC GCT GT CGG AGT
 G

 Ala Thr Leu Cys Ser Ala Leu Tyr Val Glu Asp Leu Cys Gly Ser Val Phe Leu Val GLY
 421 GCC ACC CCT TTG CTG GGC CCT ATG TGG GG ACT TTG TGG GT CTG TCT TTG TCG GT
 C

 Gln Leu Phe Thr Phe Ser Pro Arg Arg His Ile Trp Thr Thr Gln Asp Cys Asn Cys Ser Ile
 481 CAA CT GTR TCA CT TCC CCA GGG GCA ACT GG GAC AAC GCA AGG GAA GATT GCA ACT GCT CTATC
 A

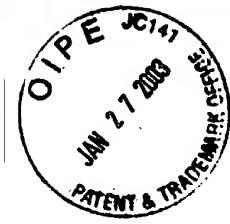


FIG. 81B



1. human 27 2. HCV 1 3. human 23

FIG. 82A

1 CGGCCTCGCCGACCTCATGGGGTACATTCCGCTCGGGCCTGGCTCCCTCTGGGGCGCTGCCAGGGCCCTGGC
 1 CGGCTTCGCCGACCTCATGGGGTACATACCGCTCGTGGGCCCCCTCTGGAGGGCGCTGCCAGGGCCCTGGC
 1 CGGCTTCGCCGACCTCATGGGGTACATACCGCTCGTGGGCCCCCTCTGGAGGGCGCTGCCAGGGCCCTGGC

 73 GCATGGCGTCCGGTTCTGGAAAGACAGGGAACTATGCCAACAGGGAACTATGCCAACCTTCCCTGGTGTCTTCTCTAT
 73 GCATGGCGTCCGGTTCTGGAAAGACGGCGTGAACATATGCCAACAGGGAACTATGCCAACAGGGAACTATGCCAACCTTCCCTGGTGTCTTCTCTAT
 73 GCACGGCGTCCGGTTCTGGAAAGACGGCGTGAACATATGCCAACAGGGAACTATGCCAACAGGGAACTATGCCAACCTTCCCTGGTGTCTCTTCTAT
 145 CTTCCCTCTGGCTCTGCTCTGCCCTGACCCGTGCCGCACTGGCTAACCAAGTACGCCAACCTCCtCGGGcaT
 145 CTTCCCTCTGGCCCTGCTCTGCTTGACTGTGCCCCTGCTTGCCGCTTACCAAGTGGCAACTCCACGGGGCT
 145 CTTCCCTCTGGCCCTActCTCTGCCCTGACCCGTGCCGCTTACGCCAACCTAACCAAGTGGCAACTCTACGGGGCT
 217 TTACCAATGTCACCAATGATTGCCCTAAATTGAGTATTGAGTACGAGTGTGTAACGCCCTCGAAatGTTGGGTGCCGGTtagCCCCCACAGTGGCCAC
 217 TTACCACTGTCACCAATGATTGCCCTAACTCGAGTATTGAGTACGAGGCGGGCGATGCCATCTGCACACTCC
 217 TTACCAATGTCACCAATGATTGCCCTAACTCGAGTATTGAGTACGAGGCGGGCGATGCCATCTGCACACTCC
 289 GGGGTGtGTCCCTTGCCTTCGGGAGGGtAAGCCCTCGAAatGTTGGGTGCCGGTtagCCCCCACAGTGGCCAC
 289 GGGGTGCGTCCCTTGCCTTCGGGAGGGtAAGCCCTCGAGGTGTTGGGTGGCGATGCCATCTGCACACTCC
 289 GGGGTGtGTCCCTTGCCTTCGGGAGGGtAAGCCCTCGAGGTGTTGGGTGGCGtAAGCCCTACGGTGGCCAC



FIG.
3

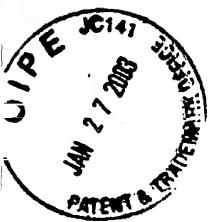


793	tgcCaggACcagGcgcTcaccAGGCCCCAAGCAGataTCCAGCTGATCAAC
793	CGGCCAcACTgtGtCTGGATTGTTAGGCCCTCGCACCGGGCCAGCAGTCAGCTGATCAAC
793	*****
865	CAACGGCACTGGCACATCAATGCCACGGCCTTGAAGTGAATGcgAGCCTGAGACACTGGCTGGTAGCgGG
865	*****
865	CAACGGCACTGGCACATCAATAGCAGGGCTGAACTGCAATGatAGCCTCAACACGGCTGGTAGCAGG
865	*****
937	GCTCTCTATTACCAACAATCAACTCTCAGGCTGCCCGAGAGGatgGCCAGCTGtaGGCCCCCTgCCGA
937	*****
937	GCTTTCTATCACCCACAAGTCAACTCTCAGGCTGTCAGAGGctAGCCAGCTGCCAGCCCTTACCGA
937	*****
937	GCTTTCTATCACCAATACTCAACTCTCAGGCTGTCAGAGGtGCCAGCTGCCAGCCCTCACCGA
1009	TTTGCACAGG
1009	*****
1009	TTTTGACCAAGG
1009	*****
1009	TTTGCCCCAGG

FIG. 82C

FIG. 83

1 GFADLMLGYIPLVGAPLGGAARALAHLGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTVPA
1 GFADLMLGYIPLVGAPLGGAARALAHLGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTVPA
1 GFADLMLGYIPLVGAPLGGAARALAHLGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTVPA
73 YHVTNDCPNSSTVETLADTILSPGCVPVCREGNASKCWWpvaPTVATRDGKLPA
73 YHVTNDCPNSSTVETLADTILSPGCVPVCREGNASKCWWpvaPTVATRDGKLPA
73 YHVTNDCPNSSTVETLADTILSPGCVPVCREGNASKCWWpvaPTVATRDGKLPA
145 SALYVGDLICGSVFLVGQLETFSPRRHWTQDCNCNSIYPGHITGHRA
145 SALYVGDLICGSVFLVGQLETFSPRRHWTQDCNCNSIYPGHITGHRA
145 SALYVGDLICGSVFLVGQLETFSPRRHWTQDCNCNSIYPGHITGHRA
217 LDMDIAGAHWGVLAGIAYFSMVGNWAKVTLVILLFAGVDA
217 LDMDIAGAHWGVLAGIAYFSMVGNWAKVTLVILLFAGVDA
217 LDMDIAGAHWGVLAGIAYFSMVGNWAKVTLVILLFAGVDA
289 NGSWHIN-TALNCNaSLdTGWVAGLFFYHKENSSGC
289 NGSWHIN-TALNCNaSLdTGWVAGLFFYHKENSSGC
289 NGSWHIN-TALNCNaSLdTGWVAGLFFYHKENSSGC
1. human 27
2. HCV 1
3. human 23



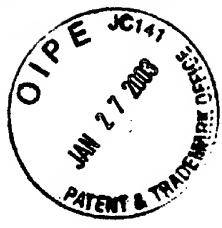


FIG. 84

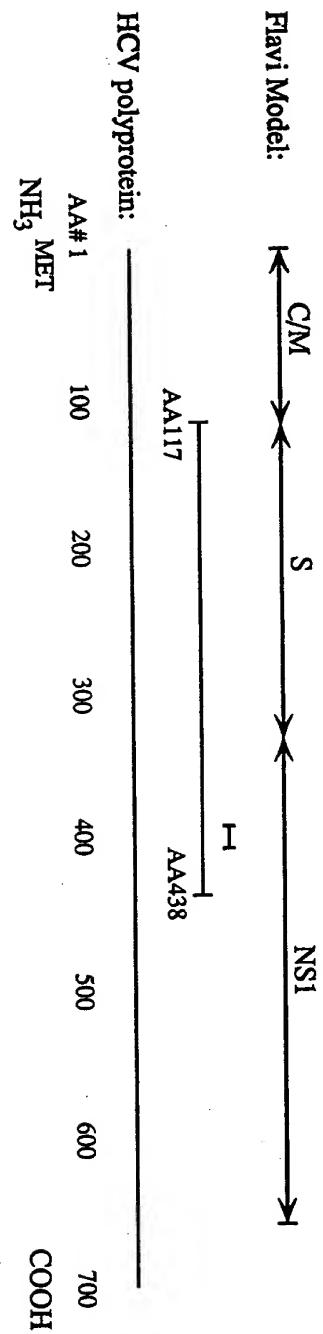


FIG. 85A

1. ssThorn#8.r (1-587)
2. SSECL#2.r (1-587)
3. SSHCTL8#7.r (1-587)
4. envl.hcv (1-1657)

GA
GA
GA
GA

289 ggggtggggggatggctccctgtctcccggtggctcggccctagctggggccacagacccggcgtagg

3 ATTCCGAATTGGTAAGGTCAACGATACCCATTACCTGGGCTTCGCGACCTCATGGGTACATACCGCTC
3 ATTCCGAATTGGTAAGGTCAACGATACCCATTACCTGGGCTTCGCGACCTCATGGGTACATACCGCTC
3 ATTCCGAATTGGTAAGGTCAACGATACCCATTACCTGGGCTTCGCGACCTCATGGGTATATACCGCTC
361 tcgcGCCAATTGGTAAGGTCAACGATACCCATTACCTGGGCTTCGCGACCTCATGGGTACATACCGCTC

75 GTCCGGCGCCCTCTTGGggGGCCCTGCCAGGGCCTGGCGCATGGCGTCCGGGTTCTGGAAAGACCGCGTGAAC
75 GTCCGGCGCCCTCTTGGAGGGCGCTGCCAGGGCCTGGCGCATGGCGTCCGGGTTCTGGAAAGACCGCGTGAAC
75 GTCCGGCGCCCTCTTGGAGGGCGCTGCCAGGGCCTGGCGCATGGCGTCCGGGTTCTGGAAAGACCGCGTGAAC
433 GTCCGGCGCCCTCTTGGAGGGCGCTGCCAGGGCCTGGCGCATGGCGTCCGGGTTCTGGAAAGACCGCGTGAAC

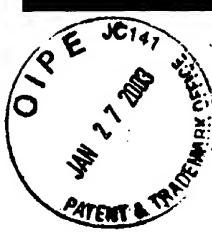
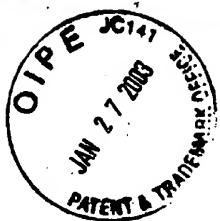


FIG. 85B

147 TATGCAACAGGGAAACCTTCTTGCTCTTCTCTCTTGCCatGCTCTTGtctGACCGTG
147 TATGCAACAGGGAAACCTTCTTGCTCTTCTtATCTTCTTGCCtTGCTCTTGCTTGACTGG
147 TATGC CAGGGAAACCTTCTTGCTCTTCTATCTTCTTGCCtTGCTCTTGCCtTGACTGG
505 TATGCAACAGGGAAACCTTCTTGCTCTTCTATCTTCTTGCCCTGCTCTTGCCtTGACTGG
219 CCCGCTTCAGCTACCAAGTGCGCAACTCCaCGGGCTTACCATGTCACCAACAGATGCCCAACTCGAGt
219 CCCGCTTCAGCCTACCAAGTGCGCAACTCCtCGGGCTTACCATGTCACCAATGATGGCCtAACTCGAGc
219 CCCGCTTCAGCCACCAAGTGCGCAACTCCACGGGGCTTACCATGTCACCAATGATGCCCAACTCGAGt
577 CCCGCTTCGCGtACCAAGTGCGCAACTCCACGGGGCTTACCAATGATGGCCtAACTCGAGt
291 ATTGTGTACCGAGGGGGCATGCTATCCGTACGCTCCGGTGTGTCCTTGGTTGCGAGGGtAACGG
291 ATTGTGTACCGAGGGGGCATGCCATCCGTACGCTCCGGTGTGTCCTTGGTTGCGAGGGCAACGGtC
291 ATTGTGTACCGAGGGGGCATGCCATCCGTACGCTCCGGTGTGTCCTTGGTTGCGAGGGCAACGGtC
649 ATTGTGTACCGAGGGGGCATGCCATCCGTACGCTCCGGTGTGTCCTTGGTTGCGAGGGCAACGG
363 TCGAGGTGTGGGTGGCGATGACCCCCACGGTGGCC9CCAGGGACGGCAGACTCCCACAAACGGCAGCTGCGA
363 TCGAGGTGTGGGTGGCGATGACCCCCACGGTGGCCACCCAGGGGGCAAACCTCCCACAAACGGCAGCTGCGA
363 TCGAGGTGTGGGTGGCGtGACCCCCACGGTGGCCACCCAGGGGGCAAACCTCCCACAAACGGCAGCTGCGA
721 TCGAGGTGTGGGTGGCGatGACCCCCACGGTGGCCACCCAGGGATGCGAAACTCCCCACAAACGGCAGCTGCGA





435 CGTCACATCGATCTGCTGGAGGCCACCCCTCGCTGGCCTCTACGTGGGACCTGTGGGTCC
435 CGTCACATCGATCTGCTGGAGGCCACCCCTCTGCTGGCCTCTACGTGGGACCTGTGGGTCT
435 CGTCACATCGATCTGCTGGAGGCCACCCCTCTGCTGGCCTCTACGTGGGACCTGTGGGTCT
793 CGTCACATCGATCTGCTGGAGGCCACCCCTCTGCTGGCCTCTACGTGGGACCTGTGGGTCT

507 atCTTTCTTGTGGTCAACTGTTcACCTTCCTCCAGGGCCACTGGACGCCAAGGTGCAATTGCTCT
507 GTCTTCTaCTTGTGGTCAACTGTTACCTTCTCCAGGGCCACTGGACGCCAAGGTGCAATTGCTCT
507 GTCTTCTTGTGGCCAACGTGTTACCTTCTCCAGGGCCACTGGACGCCAAGGTGCAATTGCTCT
865 GTCTTCTTGTGGCCAACGTGTTACCTTCTCCAGGGCCACTGGACGCCAAGGTGCAATTGCTCT

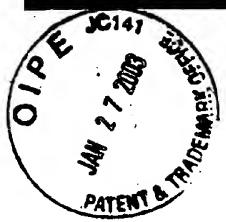
579 ATCGAATTc
579 ATCGAATTc
579 ATCGAATTc
937 ATCTatcccc

FIG. 85C



10 20 30 40
GAATTGGACAGCAAGGTTGCAATTGCTCTATCTATCCGGCCATAT
X: :::::::::::::::::::::
/SSp CTCTCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCGGCCATAT
550 560 570 580 590 600
50 60 70 80 A 90 100
AACAGGTCAACCGCATGGCATGGGATATGATGATGAACCTGGTCCCTACGACGGCGTTAGT
::: :::::::::::::::::::::
AACGGGTCAACCGCATGGCATGGGATATGATGATGAACCTGGTCCCTACGACGGCGTTGGT
610 620 630 640 650 660
110 120 130 140 150 160
GGTAGCTCAGCTGCTCCGGATCCCACAAGCCATCTGGACATGATCGCTGGTGCTCACTG
::: :::::::::::::::::::::
AATGGCTCAGCTGCTCCGGATCCCACAAGCCATCTGGACATGATCGCTGGTGCTCACTG
670 680 690 700 710 720
170 180 190 200 210 220
GGGAGTCCTGGCGGGCATAGCGTATTCTCCATGGTGGGAACGGCGAAGGTCTTGGC
::: :::::::::::::::::::::
GGGAGTCCTGGCGGGCATAGCGTATTCTCCATGGTGGGAACGGCGAAGGTCTTGGT
730 740 750 760 770 780
230 240 250 260 270 280
AGTGCTGCTGCTATTGCCGGCGTCACGGGAAACCCACGTCACTGGGGGATGCCGC
::: :::::::::::::::::::::
AGTGCTGCTGCTATTGCCGGCGTCACGGGAAACCCACGTCACTGGGGGAGTGCCGG
790 800 810 820 830 840
290 300 310 320 330 340
CAAAACTACGGCTAGCCTTACTGGTCTCTCAATTAGGTGCCAACAGAACATCCAGCT
::: :::::::::::::::::::::
CCACACTGTGTCTGGATTGTTAGCCTCTCGCACCAAGGGCGCAAGCAGAACGTCCAGCT
850 860 870 880 890 900
350 360 370 380 390 400
GATCAACACCAACGGCAGTTGGCACATCAACAGGACGGCCTTGAACGTCAATGATAGCCT
::: :::::::::::::::::::::
GATCAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACGTCAATGATAGCCT
910 920 930 940 950 960
410 420
CAACACCGGCTGGAAATTC
::: ::::::::::X
CAACACCGGCTGGTTGGCAGGGCTTTCTATCACCACAAAGTTCAACTCTTCAGGCTGTCC
970 980 990 1000 1010 1020

FIG. 86



AA #117-308 (putative envelope region)

FIG. 87

1) HCT #18 (USA)	3 clones sequenced
2) JH23 (USA)	?
3) JH 27 (USA)	?
4) PBL-Th (USA)	2 clones sequenced
5) EC1 (Italy)	3 clones sequenced
6) HCV-1 (chimpanzee)	multiple

C/M ← → S

1)	(P)
2)	
3)	
4)	
5)	
6) RNLGKVIDTLTCGFADLMGYIPLVGAPLGGAAARALAHGVRVLEDGVNYATGNL	

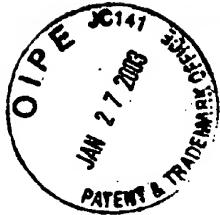
1)	H		
2)			
3)	S	T	T
4)	L		
5)	(F)	S	
6) PGCSFSIFLLALLSCLTVPASAYQVRNSTGLYHVTNDCPNSSIVYEAADAILH			

1)	(H)	V	V	T		
2) A	D	V	V	K	T	
3) S			PVA	N		
4) A				A	R	T
5)	H	V		T		
6) TPGCVPCVREGNASRCWVAMPTVATRDGKLPATQLRRHIDLLVGSATLCS						

1)			
2)	I	D	
3)		D	
4)			
5)	I		
6) ALYVGDLCGSVFLVGQLFTSPRRHWTQGCNCI			

SUMMARY: "S" AA117-308 (93%)

HCT#18, PBL-Th, EC1(Italy) have 97% homology with HCV-1
 JH23 and JH 27 have 96% and 95% homology with HCV-1, respectively



AA#300-438 (C-terminal region of the putative envelope region and amino ~1/3 of NS1)

- 1) JH23 ?
- 2) JH27 ?
- 3) Japanese isolate (T. Miyamura) ?
- 4) EC10 (Italy) 2 clones sequenced
(one nt difference, which did not
result in an amino acid change)
- 5) HCV-1 (chimpanzee) multiple

S ← → NS1
A V
A
VS VM V

5) TTQGCNCISIYPGHITGHRMAWDMMMNWSPTTALVMAQLLRIPOQAILDMIAGA

1)	M	R	ARSTA VA
2)		T Y T	N A R T Q A L T F
3)	L Y	I M	G H R V Q V T T L T
4)		A	I A K T A S L T A

5) HWGVLAGIAYFSMVGNWAKVLVVLLL FAGVDAETHVTGGSAGHTVSGFVSL

1)	F S R I	I	T V
2)	FT D I	I R	A D
3)	F R S K I V	I R	Q F
4)	F N L I	I R	N

5) LAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWL

SUMMARY: NS 1 AA 330-660

"Isolate" %Homology (AA330-438) %Homology (AA383-405)

JH23	83	57
JH27	80	39
Japanese	73	48
EC10 (Italy)	84	48

FIG. 88



FIG. 89A

5' terminus-----
 CACTCCACCATGAATCACTCCCTGTGAGGAACCTACTGTCTTCACGCAGAAAGCGTCTAG
 CCATGGCGTTAGTATGAGTGTGCGAGCCTCAGGACCCCCCTCCGGGAGAGCCATA
 GTGGTCTGCGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTCTTGGGA
 TCAACCCGCTCAATGCCCTGGAGATTGGGCGTCCCCCGCAAGACTGCTAGCCGAGTAGT
 GTTGGGTGCGAACAGGCCTTGTGGTACTGCCGTAGGGTGCTTGCAGTGCCCCGGGAG-300

(Putative initiator methionine codon)

G C
 GTCTCGTAGACCGTGACCATGAGCACGAATCTAAACCTCAAAAAAAACAAACGTAA
 CACCAACCGTCGCCACAGGACGTCAGTTCCGGGTGGCGGTAGATCGTTGGTGGAGT
 TTACTTGTGCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCAGCAGAAAGACTTCCGA
 GCGGTGCGAACCTCGAGGTAGACGTCAGCCTATCCCCAAGGCTCGTGGGCGAGGGCAG
 GACCTGGGCTCAGGGGGTACCCCTGGCCCTATGGCAATGAGGGCTGCGGGTGGGC-600
 GGGATGGCTCTGTCTCCCCGTGGCTCTGGCTAGTGGGGCCCCACAGACCCCGGCG
 TAGGTGCGCAATTGGTAAGGTCACTGATAACCTTACGTGCGGCTCGCCGACCTCAT
 GGGGTACATACCGCTCGCGGCCCTTGGAGGCGCTGCCAGGGCCCTGGCGCATGG
 CGTCCGGGTTCTGGAAGACGGCGTGAACATATGCAACAGGAACCTCTGGTTGCTTT

C
 CTCTATCTCCTCTGGCCCTGCTCTTGACTGTGCCCGCTTCGGCCTACCAAGT-900
 GCGCAACTCACGGGGCTTACACGTCACCAATGATTGCCCTAACCTCGAGTATTGTGA
 CGAGGCGGCCATGCCATCCTGCACACTCGGGGTGCGTCCCTGCGTTCGTAGGGCAA
 CGCCCTGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACACTCCC
 CGCGACGCAGCTCGACGTCACATCGATCTGCTTGTGGGAGCGCCACCCCTGTTCGGC
 CCTCTACGTGGGGGACCTATGCCGGTCTGTCTTCTGTCGGCCAACGTTCACCTCTC-1200
 TCCCAGGCGCACTGGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCCATATAAC

G
 GGGTCACCGCATGGCATGGGATATGATGATGAACCTGGTCCCCTACGACGGCGTTGGTAAT
 GGCTCAGCTGCTCCGGATCCCACAAGCCATCTGGACATGATCGCTGGTGTCACTGGGG
 AGTCTGGCGGGCATAGCGTATTCCTCATGGTGGGAACCTGGCGAAGGTCTGGTAGT
 GCTGCTGCTATTTGCCGGCTGACCGGAAACCCACGTACCGGGGAAAGTGCAGGCA-1500
 CACTGTGTCTGGATTGTTAGCCTCTCGCACAGGCGCCAAGCAGAAGCTCCAGCTGAT
 CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACTGCAATGATAGCCTCAA
 CACCGGCTGGTGGCAGGGCTTCTCATACCCACAAGTCAACTCTTCAGGCTGCTCTGA
 GAGGCTAGCCAGCTGCCGACCCCTTACCGATTGTCAGGAGGCTGGGGCCCTATCAGTTA
 TGCCAAACGGAAGCGGGCCGACCGAGCCTACTGCTGGCACTACCCCCAAAACCTTG-1800
 CGGTATTGTGCCCGCGAAGAGTGTGTTGGTCCGGTATATTGCTTCACTCCAGCCCGT
 GGTGGTGGGAACGACCGCACGGTGGCGCGCCACCTACAGCTGGGGTGAATGATAC
 GGACGTCTCGTCCTAACAAATACCAAGGCCACCGCTGGCAATTGGTTGGTTGACCTG
 GATGAACTAACGGATTACCAAAGTGTGCGAGCGCCTCTGTGTCATCGGAGGGC
 GGGCAACAAACACCCCTGCACTGCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATA-2100

C
 CTCTCGGTGGCTCCGGTCCCTGGATCACACCCAGGTGCGCTGGTCAGTACCCGTATAG
 GCTTGGCATTATCCTGTAACATCAACTACACCATATTTAAATCAGGATGTAAGTGGG
 AGGGGTGCAACACAGGCTGGAAAGCTGCGTCAACTGGACGCGGGGCGAACGTTGCGATCT
 GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCAACTACACAGTGGCAGGT
 CCTCCCGTCTTCAACACCCCTACCGCCCTGTCACCGGCCCTACCCACCTCCACCA-2400
 GAACATTGTGACGTCAGTACTTGTACGGGGTGGGGTCAAGCATCGCGTCTGGCCAT
 TAAGTGGGAGTACGTCGTTCTCTGTTCTGCAAGACGCGCGCGTGTGCTCCCTG
 CTTGTGGATGATGCTACTCATATCCCAAGCGGGAGGCGGCTTGGAGAACCTCGTAATACT
 TAAATGCGACATCCCTGGCGGGACGACCGGTTCTGTATCTTCTCTGTTCTGCTT
 TGCACTGGTATTGAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCTCTACGGGATGTG-2700
 GCCCTCCTCTGCTCTGGTGGCGGGTGTGCTCGTGGGTTGATGGCGCTGACTGTCACCATA
 TTACAAGCGCTATATCAGCTGGTCTGTGGTGGCTTCAAGTGGAGGGGGCGCGACGCCGTCA
 AGCGCAACTGCACGTGTGGATTCCCCCTCAACGTCGAGGGGGCGCGACGCCGTCA



FIG. 89B

CCTACTCATGTGTGCTGTACACCCGACTCTGGTATTGACATCACCAAATTGCTGCTGGC-3000
 CGTCTTCGGACCCCTTGGATTCTCAAGCCAGTTGCTAAAGTACCCACTTTGTGCG
 CGTCCAAGGCCTTCTCGGTTCTGCGCGTAGCGCGGAAGATGATCGGAGGCCATTACGT
 GCAAATGGTCATCATTAAGTTAGGGCGCTACTGGCACCTATGTTTATAACCATCTCAC
 TCCTCTCGGGACTGGCGCACAAACGGCTTGCAGAGATCTGGCGTGGCTGTAGAGCCAGT
 CGTCTCTCCAAATGGAGACCAAGCTCATCACGTGGGGGAGATACCGCCGCGTGC-3300
 TGACATCATCACAGGCTTGCCTTTGGGGCGAGGGGGAGAGATACTGCTCGGGCC
 AGCCGATGGAATGGTCTCAAGGGTGGAGGTTCTGGCGCCATCACGGCGTACGCCA
 GCAGACAAGGGGCCTCTAGGGTGCAATACTACCAAGCCTAAGTGGCCGGACAAAACCA
 AGTGGAGGGTGAGGTCAACTGTGCTGCCAACCTTCTGGCAACGTGCA-3600
 CAATGGGGTGTGCTGGACTGTCTACCACGGGGCGAACGAGGACCATCGCGTACCCAA

T

GGGTCTGTCACTCAGATGTATACCAATGTAGACCAAGACCTTGTGGCTGGCCGCTCC

C
 GCAAGGTAGCCGCTCATGACACCCCTGCACTTGCAGGCTCTCGGACCTTACCTGGTAC
 GAGGCACGCCGATGTCATTCCCGTGCAGCGGGGGTGTAGCAGGGGAGCCGCTGTC
 GCCCGGCCCCATTCCTACTTGAAGGCTCCTCGGGGGTCCGCTTTGTGCCCCGGGG
 GCACGCCGTGGCATATTAGGGCCGCGGTGTGACCCGTGGAGTGGCTAAGGGGGTGG-3900
 CTTTATCCCTGTGGAGAACCTAGAGACAAACCATGAGGTCCCCGGTGTACGGATAACTC
 CTCTCCACCAAGTAGTGCAGGCTCCAGGTTGGCTCACCTCCATGCTCCCACAGGCAG
 CGGCAAAAGCACCAAGGTCCCAGTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
 CAACCCCTGTGCTGCAACACTGGGCTTGGTACATGTCCAAGGCTATGGGAT

T
 CGATCTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCCATCACGTACTC-4200
 CACCTACGGCAAGTCTTGCGACGGCGGGTGCTGGGGGGCGCTTATGACATAATAAT
 TTGTGACGAGTGCACCTCCACGGATGCCACATCCATCTGGCATCGGACTGTCCTTGA
 CCAAGCAGAGACTCGGGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTC
 CGTCACTGTGCCCATCCACATCGAGGAGGTTGTCTGTCCACCCACGGAGAGATCCC
 TTTTACGGCAAGGCTATCCCTCGAAGTAATCAAGGGGGGAGACATCTCATTTGTG-4500
 TCATTCAAAGAAGTAGTCGACGACTCGCCGAAAGCTGGTGCATTGGCATCAATGC
 CGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCGACCGAGCGCGATGGTGT

A
 CGTGGCAACCGATGCCCTCATGACCGGCTATAACCGGCAGTTGACTCGGTATAGACTG
 CAATACGTGTGTCACCCAGACAGTCGATTTCAGCCTTGACCCCTACCTTACCATGAGAC
 AATCACGCTCCCCAGGAATGCTGTCCTCCGCACTCAACGTCGGGGCAGGACTGGCAGGGG-4800
 GAAGCCAGGCATCTACAGATTGTGGCACCGGGGAGCGCCCTCCGGCATGTCGACTC
 GTCCGTCCTGTGAGTGTATGACGCGAGGCTGTGTTGATGAGCTACGCCGCCGA
 GACTACAGTTAGGCTACGAGCGTACATGAACACCCCCGGGCTTCCCGTGTGCCAGGACCA
 TCTTGAATTGGGAGGGCGTTTACAGGCCTACTCATATAGATGCCACTTCTATC
 CCAGACAAAGCAGAGTGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTG-5100
 CGCTAGGGCTCAAGCCCCCTCCCCCATGTTGGGACAGATGTTGAAAGTGTGATTGCGCT
 CAAGCCCACCCCTCCATGGGCCAACACCCCTGATACAGACTGGGCGCTGTTCAAATGA
 AATCACCTGACCGCACCCAGTCACAAATACATCATGACATGCGATGTCGGCCGACCTGG
 GGTGTCACAGGCTGCGTGGTCATAGTGGGAGGGCTGTGTTGCTGGGAGCCGGCAAT-5400
 CATACCTGACAGGGAAAGTCCTTACCGAGAGTTGAGATGAGATGGAAGAGTGTCTCAGCA
 CTTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTTCAAGCAGAAGGCCCTCG
 CCTCCTGCAACCGCGTCCCGTCAGGAGGTTATGCCCTGCTGTCCAGACCAACTG
 GCAAAAAACTCGAGACCTCTGGCGAAGCATATGTTGAACTTACATGAGGGATAACAATA
 CTGGCGGGCTTGTCAACGCTGCCCTGGTAACCCGCCATTGCTTCAATGATGGCTTTAC-5700
 AGCTGCTGTCACCCAGGCCACTAACACTAGCCAAACCTCTTCAACATATTGGGGGG
 GTGGGTGGCTGCCAGCTGCCGCCCGGGTCCGCTACTGCCCTTGTGGCGCTGGCTT
 AGCTGGCGCCGCCATCGGAGCTTGTGGACTGGGGAGGGTCTCATAGACATCCTTGCAAG
 GTATGGCGCGGGCGTGGCGGGAGCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCC
 CTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTGCCCGGAGCCCTCGTAGT-6000
 CGCGTGGCTGTGCAAGCAACTGCGCCGGCACGTTGGCCCGGGAGGGGGAGCTGCA
 GTGGATGAACCGGCTGATAGCCTCGCCCTCCGGGGGAAACCATGTTCCCCCACGCACTA
 CGTGGCGAGAGCGATGCACTGCCGACTGCCATACTCAGCAGCCTACTGTAAAC
 CCAGCTCTGAGGGCGACTGCACCAAGTGGATAAGCTGGAGTGTACCACTCCATGCTCCGG



FIG. 89C

TTCCTGGCTAAGGGACATCTGGGACTGGATATGCAGGGTGGAGCGACTTTAACCTG-6300
 GCTAAAAGCTAACGCTATGCCACAGCTGCCTGGGATCCCCCTTGTCTCTGCCAGCGCG
 GTATAAGGGGGTCTGGCAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
 GATCACTGGACATGTCAAAACGGGACGATGAGGGATCGCCTAGGACCTGCAGGAA
 CATGTGGAGTGGGACCTTCCCCATTATGCCTACACCACGGGCCCTGTACCCCCCTTCC
 TGCGCCGAACATACAGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG-6600
 GCAGGTGGGGACTTCAACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTG
 CCAGGTCCCATCGCCCCGAATTTCACAGAATTGGACGGGGTGCCTACATAGGTTTGC
 GCCCCCTGCAAGCCCCCTGCTGCCAGGGAGGATCATTACAGAGTGGACTCCACGAATA
 CCCGGTAGGGTCGCAATTACCTTGCAGGGAGGAGGATCTGGCCGTGTTGACGTCCAT
 GCTCACTGATCCCCCTCCCATATAACAGCAGAGGCCGGCGAAGGGTGGCGAGGGGATC-6900
 ACCCCCCCTGTGGCCAGCTCCTCGGCTAGCAGCTATCCGCTCATCTCTCAAGGCAAC
 TTGCAACCGCTAACCATGACTCCCCGTATGCTGAGCTCATAGAGGCCAACCTCTATGGAG
 GCAGGAGATGGGCGGCAACATCACCAAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGA
 CTCCTTCGATCCGTTGTGGCGGGAGGAGGACGAGCGGGAGATCTCCGTACCCGAGAAAT
 CCTGCGGAAGTCTCGGAGATTGCCAGGCCGTTGGCGGGCGAAGGGTGGCGAGGGGATCAA-7200
 CCCCCCTGCTAGTGGAGACGTGGAAAAGGCCGACTACGAACCACCTGTGGTCCATGGCTG
 TCCGCTTCCACCTTCCCTGTGCTGCCCTCGGAAGAAGCGGAGCGGTGGT
 CCTCACTGAATCAACCTTACTCTGCTTGGCGAGCTGCCACCGAGAAGCTTGGCAG
 CCTCTCAACTCCGGCATTACGGCGACAATACGACAACATCTCTGAGCCGCCCTTC
 TGCGTGGCCCCCGACTCCGACGCTGAGTCCTATTCTCCATGCCCGGCTGGAGGGGGA-7500
 GCCTGGGGATCCGGATCTTAGCGACGGGTATGGTCACGGTCAGTAGTGGAGGCCAACGC
 GGAGGATGTCGTGCTCAATGCTTACTCTGGACAGGCGCAGTCGTCACCCCGTG
 CGCCGCGGAAGAACAGAAACTGCCATCAATGCACTAAGCAACTCGTGTACGTACCA
 CAATTGGTGATTCCACCCACCTCACCGAGCTGCTTGGCAAGGAGAAGAACAGTCAATT
 TGACAGACTGCAAGTCTGGACAGCCATTACCAAGGACGACTCAAGGAGGTTAACGCAGC-7800
 GGCCTAAAGTGAAGGCTAACCTGCTATCCGTAGAGGAAGCTGCGCTGACGCCCCC
 ACACTCAGCAAATCCAAGTTGGTATGGGCAAAAGACGTCGTTGCCATGCCAGAAA
 GGCCTGAACCCACATCAACTCCGTGTTGGAAAGACCTCTGGAAGACAATGTAACACCAAT
 AGACACTACCATCATGGTAAGAACGAGGTTTCTGCGTTGAGCCTGAGAAGGGGGTGC
 TAAGCCAGCTCGTCTCATCGTGTCCCCGATCTGGCGTGCAGGAAAGATGGC-8100
 TTGTAACGACGGTTACAAAGCTCCCCCTGGCGTGTGGGAAGCTCTACGGGATTCCA
 ATACTCACCAAGGAGCAGCGGGTTGAATTCTCGTCAAGCGTGGAGTCCAAGAAAACCC
 AATGGGGTTCTGTATGATACCCGCTGCTTGTACTCACAGTCAGTGAAGAGCGACATCCG
 TACGGAGGAGGCAATCTAACATGTTGTGACCTGACCCCCAAGGCCGCTGGCATCAA
 GTCCCTCACCGAGAGGCTTATGTTGGGGCCCTTACCAATTCAAGGGGGAGAACTG-8400
 CGGCTATCGCAGGTGCCGCGAGCGCGTACTGACAACTAGCTGTGGTAACACCTCAC
 TTGCTACATCAAGGCCCCGGCAGCTGTCGAGCCGAGGGCTCCAGGACTGCACCATGCT
 CGTGTGTCGGCAGCACTTAGTCGTTATCTGTGAAAGCGCGGGGTCCAGGAGGACGCC
 GAGCCTGAGAGCCTCACGGAGGCTATGACCAGGTACTCCGGCCCCCTGGGGACCCCC
 ACAACCAAGAAACGACTGGAGCTACAAACATCATGCTCTCCAAACGTCAGTCGCCCCA-8700
 CGACGGCGCTGGAAAGAGGGTCAACTACCTCACCGCTGACCCCTAACACCCCCCTCGCGAG
 AGCTGCGTGGAGAGCAGAACACACTCCAGTCATTCTGGCTAGGCAACATAATCAT
 GTTGCCCCCACACTGTTGGCGAGGATGATGACCTTACCTTGTGCTCCATT
 AGCCAGGGACCAGCTGAAACAGGCCCTGATTGCGAGATCTACGGGCCTGCTACTCCAT
 AGAACCAACTGGATCTACCTCAATATTCAAAGACTCCATGGCCTCAGCGCATTTCAGT-9000
 CCACAGTTACTCTCAGGTGAAATTAAATAGGGTGGCGCATGCCCTCAGAAAACCTGGGGT

G

ACCGGCCCTTGCAGCTGGAGACACCAGGGCCGGAGCGTCCGCCGCTAGGCTTCTGGCCAG
 AGGAGGCAGGGCTGCCATATGTGCGAAGTACCTCTCAACTGGCAGTAAGAACAAAGCT
 CAAACTCACTCCAATAGCGGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTCACGGCTGG
 CTACAGCGGGGGAGACATTATCACAGCGTGTCTCATGCCGGCCCCGCTGGATCTGGTT-9300
 TTGCTACTCTCTGCTGAGGGTAGGCACTACCTCTCCCCAACCGATGAAGGTT
 GGGGTAAACACTCCGGCCT-----3' terminus

Some clonal heterogeneities producing amino acid
 substitutions are shown. There are many other
 "silent mutations (not shown).



FIG. 90A

R T

MSTNPKPQKKNRNTNRRPQDVKFPGGGQIVGGVYLLPRRGPRLGVRATR
KTSERSQPRGRQRPPIPKARRPEGRTWAQPGYPWPLYGNEGCWAGWLLSP-100
RGSRPSW6PTDPRRRSRNLGKVIDTLCGFADLM6YIPLVGAPLGGAARA

T

LAHVGRVLEDGVNYATGNLPGCSFSIPLLALLSCLTVPASAYQVRNSTGL-200
YHTVNDCPNSSIVYEADAILHTPGCVCVREGNASRCWVAMTPTVATRD
GKLPATQLRRHIDLLVGSATLCSALYVGDCGSVFLVGQLFTSPRRHWT-300

V

TQGCNCASIYPGHI TGHRM AWDMMMNWSPTTALVMAQLL RIPQA ILDMIAG
AHWGVLAGIAYFSMVG NWAKLVVLL FAGVDAETHVTGGSAHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWLAGLFYHHKFNS
GCPERLASCRPLTDFDQGWGPISYANGSGPDQRPYCWHYPPKPCGIVPAK-500
SVCGPVYCFTPSPVVVGTTDRSGAPTYSWGENTDVFVLNNTRPPLGWNF
GCTWMNSTGFTKVC GAPP CVIGGAGNNLHCPTDCRKHPDATYSRCGSG-600

I

PWLTPRCLVDPYRLWHYPC TINYTI FKIRMYVGGVEHRLAACNWTRGE
RCDLEDRDRSELSPLLTTQWQVLPCSF TLPALSTGLIHLHQNI DVQ-700
YLYGVGSSIASWAIKWEYVVLLFLLADARVCSCLWMMLI SQAEEAALEN
LVILNAASLAGTHGLVSFLVFFCAWYLGK WVPGAVYTFYGMWPLLLL-800

(N)

LALPQRAYALDTEVAASC GGVVLVGLMALTLS PYYKRYISWCLWWLQYFL
TRVEAQLHVWIPPLNVRGGRD AVILLMCAVHPTLVFDITKLLAVFGPLW-900
ILQASLLKVPYFVRVQGLLR FCALARKMIGGHYQMVIIKLGALTGTYY
NHLTPLRDWAHNGLRDLAVAVEP VVFSQMETKLITWGADTAACGDI INGL-1000
PVSARRGREI LLGPADGMVSKGWRLLAPITAYAQQT RGLLGCIITSLTGR
DKNQVEGEVQIVSTAATFLATCINGVCWTVYHGAGTRTIASPKGPVIQM-1100

S T

YT NVDQDLVGWPAPQGSRSLTPCTCGSSDLYLVTRHADVIPVRRRGDSRG
SLLSPRPISYLGSSGGPLLC PAGHAVGIFRAAVCTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPV PQSFQVAHLHAPTGSGKSTKVPAA YAAQGYK

L

VLVLPNSVAATLGFGAYMSKAHGIDPNIRTGVRTITTGSPITYGKFL-1300

ADGGCGGGAYDIIICDECHSTDATSI LGIGTVDQAE TAGARL VVLATAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEVIKGRHLIFCHSKKKC-1400
DELAAKLVALGINAVAYYRG LDVSVIPTSGD VVVVATDALMTGYTGDFDS

Y

(S)

VIDCNCVTQTVDFSLDPTFTIETITL P QDAVSRTQRRGRTGRGKPGIYR-1500
FVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNTPGLPV
CQDHLEFWEGVFTGLTHIDAHFLSQTKQSGENLPYLVAYQATVCARAQAP-1600
PPSWDQMWKCLIRLKPTLHGPTPLLYRLGAVQNEITLTHPVTKYIMTCMS
ADLEVVSTWVLVGGVLAALAA YCLSTGCVVIVGRVVLSGKPAIIPDREV-1700
LYREFDEMEECSQHLPYIEQGMMLAEQFKQKALG LQTA SRQAEVIA PAV
QTNWQKLETFWA KHMWNFISGIQYLAGLSTLPGNPAIASLMAFTA AVTSP-1800
LTTSQTLLFNILGGWVA AQLA PGAATAFVGAGLAGAAIGSVGLGKVLID



FIG. 90B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVGVVCAA-1900

(HC)
ILRRHVGPGEGAVQWMNRLIAFASRGNHVSPTHYVPESDAAARVTAISSL
LTVTQLLRLHQWISSECTTPCSGSWLRDIWDWICEVLSDFKTLKAKLM-2000

(V)
PQLPGIPFVSCQRGYKGVRWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTFPINAYTTGPCTPLPAPNYTFALWRVSAEYVEIRQVGDHF-2100
YVTGMMTDLNKCPHQVPSPEFFTELDGVRLHRFAPPCKPLLREEVSFRVG
LHEYPGSQLPCEPEPDVAVLTSMLTDPHITAEEAAGRRLARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSPDAELIEANLLWRQEMGGNITRVESENKV
VILDSFDPLVAEEDEREISVPAEILRKSRRFAQALPVARPVDYNPPLVET-2300

(S)
WKKPDYEPPVVGCPPLPPKSPPPVPPPRKKRTVVLTESTLSTALAELATR

(FA)
SFGSSSTSGITGDNTTSSEPAVGCGPPDSAESYSSMPPLEGEPGDPDL-2400
SDGSWSTVSSEANAEDVCCMSYSWTGALVTPCAAEEQKLPINALSNL
LRHHNLVYSTTSRSACQRQKKVTFDRLQVLDSHYQDVLKEVKAAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSFKGYGAKDVRCHARAKAVTHINSVWKDLLEDN
VTPIDTTIMAKNEVFCVQPEKGGRKPARLIVFPDLGVRVCEKMALYDVVT-2600
KLPLAVMGSSYGFQYSPGQRVEFLVQAWSKTPMGFSYDTRCFDSTVTE

(G)
SDIRTEEAIYQCCDLDPQARVAIKSLTERLYVGGPLTNSRGENCYRRCR-2700
ASGVLTSCGNLTGYIKARAACRAAGLQDCTMLVCGDDLVVICESAGVQ
EDAASLRAFTEAMTRYSAPPGDPPQPEYDLELITSCSSNVSAHDGAGKR-2800
VYYLTRDPTTPLARAAWETARHTFVNWSLGNIIIMFAPTLWARMILMTHFF
SVLIARDQLEQALDCEIYGACYSIEPLDLPPIIQRLLHGLSAFSLHSYSPG-2900

^G
EINRVAACLRKLGVPPLRAWRHRARSVRARLLARGGRAAICGKYLFNWAV

(P)
RTKLKLTPIAAGQLDLSGWFTAGYSGGDIYHSVSHARPRWIWFCLLLA-3000
AGVGIYLLPNR0-3011

Stop codon

() = Heterogeneity due possibly
to 5' or 3' terminal cloning
artefact.

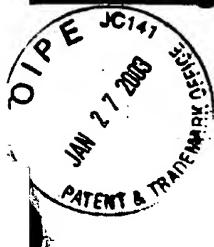


FIG. 91

